

No. 4. — *Scientific Results of a Fourth Expedition to Forested Areas in East and Central Africa*

IV

Reptiles

BY ARTHUR LOVERIDGE

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INTRODUCTION

The collection on which the following report is based, was made by the author while investigating the fauna of certain forested regions of East and Central Africa. The enquiry was carried out on behalf of the Museum of Comparative Zoölogy with a fellowship granted by the John Simon Guggenheim Memorial Foundation of New York.

A synopsis of the itinerary is given in the caption accompanying Plate 1—a map showing the position of the principal collecting localities. Altitudes and detailed information regarding the various camps will be furnished in the final report of this series which will deal with the general conclusions arrived at.

The period of collecting reptiles was from October 27, 1938, to July 25, 1939, during which time 1,862 reptiles, representing 144 species, were secured. This total, which does not include seven additional species received as a gift, comprises 1 species of crocodile, 6 of tortoises, 74 (+ 7 donated) of snakes, and 61 of lizards, including chameleons. In all 17 of these were new to the collection of the Museum of Comparative Zoölogy exclusive of 7 other races not previously recognized, but now considered valid as a result of this study of additional material.

Seven forms are here described as new, some (in parentheses) are based on material from earlier collections. The new forms are:

<i>Typhlops tettensis rondoensis</i> ,	Nchingidi, Rondo Plateau, T. T.
<i>Hemidactylus tropidolepis barbouri</i> ,	Changamwe, near Mombasa, K. C.
¹ <i>Amphisbaena rondoensis</i> ,	Nchingidi, Rondo Plateau, T. T.
<i>Melanoseps ater rondoensis</i> ,	Nchingidi, Rondo Plateau, T. T.
(<i>Melanoseps ater matengoensis</i> ,	Ugano, Matengo Highlands, T. T.)
(<i>Melanoseps ater uzungwensis</i> ,	Kigogo, Uzungwe Mountains, T. T.)
<i>Chamaeleo dilepis idjwiensis</i> ,	Idjwi Island, Lake Kivu, B. C.

In addition to these new forms, the undermentioned races or species are recorded for the first time for certain countries.

New for Kenya Colony

Lycophidion capense ornatum Parker

New for Uganda

Dipsadoboa unicolor Günther

Miodon gabonensis collaris (Peters)

Brookesia spectrum boulengeri (Steindachner)

New for Tanganyika Territory

Lycophidion capense ornatum Parker

Lygosoma tetradactylus hemptinnei (Witte)

New for Belgian Congo

Typhlops blanfordii lestradei Witte

Miodon gabonensis graueri Sternfeld

Several species, heretofore regarded as rarities, might be singled out for special mention, among them: *Cycloderma frenatum*, *Rhamnophis a. elgonensis*, *Miodon g. graueri*, *Amphisbaena phylofiniens*, *A. orientalis*, *A. everbecki*, *Algiroides vaucreselli*, *A. africanus*, *Lygosoma g. graueri*, *L. melcagris*, *L. blochmanni*, and *Chamaeleo xenorhinus*.

¹The description of this species recently (1941) appeared in connection with a revision of the Amphisbaenidae (Bull. Mus. Comp. Zool., 87, p. 394, fig. 23).

ACKNOWLEDGMENTS

The opportunity is taken of thanking Dr. Thomas Barbour, Director of the Museum of Comparative Zoölogy, for his ever ready encouragement in furthering the prosecution of this work, and to the John Simon Guggenheim Memorial Foundation without whose generous aid this expedition would not have been possible.

Lt. Col. C. R. S. Pitman of the Game Department, not only welcomed us to Uganda and smoothed our path by many helpful deeds, but donated sundry snakes. His name follows in parenthesis after the locality of such of them as are included in this report.

In appreciation of the action of His Excellency the Governor of the Congo Belge in granting permission to collect on Idjwi Island, a selection of duplicates of such species as were collected in Belgian territory are being set aside for dispatch to the Congo Museum, Tervueren, after the German evacuation of Belgium.

Messrs C. M. Bogert (American Museum) and V. FitzSimons (Transvaal Museum) have patiently answered all manner of questions which entailed lengthy examination of much material in the herpetological collections of which they are in charge.

A number of my colleagues have aided by identification of parasites or prey in their particular field. Among those to whom I am indebted are: Dr. J. C. Bequaert (ticks), Dr. Fenner A. Chace Jr. (crabs), Dr. J. P. Chapin (nestlings), Dr. P. J. Darlington Jr. and Floyd G. Werner (insects in certain stomach contents), Dr. H. R. Hill (linguatulids), and Drs. B. Schwarz and J. T. Lucker (nematodes and trematodes), of the United States Department of Agriculture.

The photographs illustrating this report were taken by my son, Brian A. Loveridge, and for permission to use the blocks of plates 2-6 we are indebted to the Editor of the Scientific Monthly, in which journal (June and July, 1940) they appeared as illustrations to a popular account of the safari.

SUMMARY OF TAXONOMIC ALTERATIONS

The undermentioned change in generic status is made:

Lacerta vauereselli Tornier becomes *Algiroides vauereselli* (Tornier)

The following forms are accorded subspecific rank:

Dipsas medici Bianconi revived as *Dasypeltis scaber medici* (Bianconi)

Dasypeltis fasciatus A. Smith revived as *Dasypeltis scaber fasciatus* A. Smith

Coluber palmarum Leach revived as *Dasypeltis scaber palmarum* (Leach)

Mabuia boulengeri Sternfeld revived as *Mabuya maculilabris boulengeri* Sternfeld

Melanoseps ater longicauda Tornier revived

Typhlops obtusus Peters becomes *Typhlops tettensis obtusus* Peters

Calamelaps feae Boulenger becomes *Calamelaps unicolor feae* Boulenger

Calamelaps warreni Boulenger becomes *Calamelaps unicolor warreni* Boulenger

Aparallactus uluguruensis B. & L. becomes *Aparallactus capensis uluguruensis* Barbour & Loveridge

Sepsina hemptinnei Witte becomes *Scelotes tetradactylus hemptinnei* (Witte)

Rhampholeon boulengeri Steindachner becomes *Brookesia spectrum boulengeri* (Steindachner)

The undermentioned are considered to be synonyms:

<i>Kinirops spekii</i> Gray	= <i>Kinirops belliana belliana</i> Gray
<i>Thrasops j. mossambicus</i> Mertens	= <i>Dispholidus typus</i> (A. Smith)
<i>Dasypeltis macraris</i> Boulenger	= <i>D. scaber fasciatus</i> A. Smith
<i>Calamelaps mellandi</i> Boulenger	= <i>C. unicolor warreni</i> Boulenger
<i>Calamelaps pellegrini</i> Angel	= <i>Rhinocalamus ventrimaculatus</i> Roux
<i>Aparallactus ubangensis</i> Boulenger	= <i>Aparallactus modestus</i> (Günther)
<i>Aparallactus dolloi</i> Werner	= "
<i>Aparallactus congcicus</i> Werner	= "
<i>Aparallactus batesii</i> Boulenger	= "
<i>Aparallactus nigrocollaris</i> Chabanaud	= "
<i>Aparallactus n. roucheti</i> Chabanaud	= "
<i>Aparallactus graueri</i> Werner	= "
<i>Atractaspis schoutedeni</i> Witte	= <i>Atractaspis irregularis</i> (Reinhardt)
<i>Atractaspis katangae</i> Boulenger	= <i>Atractaspis bibronii</i> (A. Smith)
<i>Hemidactylus tasmani</i> Hewitt	= <i>H. mabovia</i> (Moreau de Jonnés)
<i>H. persimilis</i> Barbour & Loveridge	= <i>H. gardineri</i> Boulenger
<i>Hemidactylus mandanus</i> Loveridge	= <i>H. gardineri</i> Boulenger
<i>Algiroides boulengeri</i> Peracca	= <i>A. vauereselli</i> (Tornier)
<i>Lygosoma gromieri</i> Angel	= <i>Lygosoma kilimense</i> Stejneger
? <i>L. (Siaphos) compressicauda</i> Witte	= "
? <i>Siaphos dewittei</i> Loveridge nom. nov.	= "
<i>Lygosoma (Siaphos) burgeoni</i> Witte	= <i>Lygosoma melcagris</i> Boulenger

It might be added that the extensive synonymizing of *Aparallactus* results from revisionary studies of that and allied genera now in M. S.

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* The seven species marked by an asterisk (*) were not collected, but were presented to the Expedition by Lt. Col. C. R. S. Pitman. The three species in brackets are discussed, though not collected.

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CROCODYLIDAE

CROCODYLUS NILOTICUS Laurenti

Crocodylus niloticus Laurenti (part), 1768, Syn. Rept., p. 53: "India orientali, et Aegypto."

Juv. alc. (M. C. Z. 48000) Mbanja, nr. Lindi, T. T. 3.v.39.

Distribution. Crocodiles were plentiful at Kitaya on the Ruvuma River and frequently seen basking on the banks of the Mkulumusi River, opposite the Siga Caves, near Tanga.

Native names. *Ngwena* (Kiyao, and Kimakonde at Mbanja); *mbulu* (Kimakonde at Mikindani).

Measurements. A stocky ♀ from Kitaya measured 8 feet from snout to anus, but possessed only the stump of a tail 3 feet in length, the injury had healed long ago. The estimated weight would be between 250 and 300 pounds.

Breeding. Some of her ova, on April 1, were enlarged to an inch in diameter, but still spherical.

Diet. Her stomach was empty except for a couple of pounds weight of pebbles and gravel. That of the Mbanja crocodile was full of marine crabs (*Sesarma meinerti*) from the nearby estuary.

Defence. An Mbanja man, going after dark to bathe in a small pool near his house, was greeted by a loud hissing noise. Returning home for a pole, he killed the young crocodile which had sought to scare him.

Migration. A Kitaya man, at daybreak was passing along a native footpath through a maize plantation when he heard a grunting noise. Thinking of pigs, he crept to the spot and peering through the stems of maize, saw an eleven-foot crocodile. After obtaining a heavy pole, he smashed in the skull so effectively that he rendered the reptile useless as a specimen.

Folklore. On learning that I had no use for the carcass, one of my Baganda skimmers asked to be allowed to excise the musk glands and tip of the injured tail. These, said he, if hung on a game net, would insure that wild pigs and blue duiker became ensnared during a drive, a form of hunting on which he was something of an authority.

At Mbanja, the chief and his brother requested me most earnestly to see that the viscera of the young crocodile was buried, and on no account to allow anyone to have it, "for", said they, "the bile is intensely poisonous and some years ago, when put into a well here, caused the death of several people."

TESTUDINIDAE

KINIXYS BELLIANA BELLIANA Gray]

Kinixys Belliana Gray, 1831, Syn. Rept., p. 69: No locality.

Kinixys Spekii Gray, 1862, Ann. Mag. Nat. Hist. (3), 12, p. 381: Central Africa.

1 ♂ 3 ♀ (M. C. Z. 48001-4) Ujiji, T. T. 11.iii.39.

♂ (M. C. Z. 48005) Kitaya, T. T. 27.iii.39.

2 ♂ 2 ♀ (M. C. Z. 48006-9) Mikindani, T. T. 21-24.iv.39.

♀ (M. C. Z. 48010) Amboni Estate, T. T. 19.vi.39.

Distribution. Seen also at Nchingidi, Rondo Plateau; and near Lake Rutamba.

Native names. *Ngongo* (Kiyao); *nambi* (Kimakonde and Kimawiha).

Variation. After further careful study of *all* the Tanganyika and Kenya material of this genus in the Museum, I am forced to the conclusion that they represent but one highly variable species possessing no stable characters on which races can be separated. Apparently the high vaulted type, which I previously thought was characteristic of the savanna, is the result of vertical growth continuing after longitudinal growth has slowed down. Females are somewhat broader than males but the whole Mikindani series are distinctly broader than any other East African specimens.

Height of carapace is included in its length from 2.0 to 2.5 times, though the total lengths are from 127 to 191 mm., *i.e.* semiadult or adult; width of nuchal is included in the width of its adjacent marginal from 3 (M. C. Z. 48004) to 18 (M. C. Z. 48008-9) times in the whole series, or from 4 to 18 times in the Mikindani series alone! Vertebrae 5, except for M. C. Z. 48001 which has 6; marginals 22, except for M. C. Z. 48001 which has 24.

Sexual dimorphism. Boulenger (1889a, p. 144) thought that the length of the thickened anterior lip of the plastron equaled about a quarter of the plastral length in males, a fifth in females. There is an average difference but the area of overlap is too great to make the character of value, thus, length of gulars into plastral length in 9 East African males ranges from 6 to $7\frac{1}{2}$ times, average 6.5, in 12 females it ranges from 7 to $8\frac{1}{2}$ times, average 8.4, but in a ♂ and ♀ (M. C. Z. 48008-9) from the same locality it may be the same, *i.e.* approximately 7 times.

Measurements. Largest ♂ (M. C. Z. 48005) measures 183 mm. in length of carapace, 78 mm. in height; largest ♀ (M. C. Z. 48010) measures 191 mm. in length of carapace, 92 mm. in height.

Parasite. Ticks (*Amblyomma nuttalli*) were present on individuals from every locality.

MALACOCHERSUS TORNIERI (Siebenrock)

Testudo tornieri Siebenrock, 1903, Anz. Akad. Wiss. Wien, **40**, p. 185, pl. —: Busisi, s. end of Lake Victoria, Tanganyika Territory.

1 (M. C. Z. 48001) Between Kiponda & Mitungu, T. T. 8.v.39.

Native name. *Kobe* (Kimwera).

Habitat. Though only fifty miles south of Lindi, from which the species has been recorded, the finding of this young, 51 mm., tortoise on the Rondo Plateau was something of a surprise for no rocks were visible in the vicinity. As it was lying dead beside a much-used path, the possibility of its having been transported by native agency should not be overlooked.

PELOMEDUSIDAE

PELOMEDUSA SUBRUF A OLIVACEA (Schweigger)

Emys olivacea Schweigger, 1814, Prodrumi Mon. Chelon., p. 38: "In Fabulosis Nigritiae" Adanson coll. = Senegal.

Pentonyx Gehafte Rüppell, 1835, Neue Wirbelth. Fauna Abyss., Amph., p. 2, pl. i: Massaua, Eritrea.

Pelomedusa Gasconi Rochebrune, 1884, Faune Sénégalie, Rept., p. 25, pl. i, figs. 1-2: Dagana, Senegal (restricted).

1 (M. C. Z. 48012) Mabira Forest, U. 14.xi.38.

History. Heretofore all East African marsh terrapin have been referred by me to *P. galeata*, a name which Mertens (1937, Zool. Anz., **117**, p. 139) has shown must give place to *subrufa* Lacépède, 1788, whose type locality of "Indien" he restricts to the Cape of Good Hope. It is this typical form which occurs throughout Tanganyika and over the greater part of Kenya and Uganda. It is characterized by the pectoral shields forming a suture on the median line of the carapace.

From West Africa we have the name *olivacea* Schweigger, 1814, and though his description is scanty, the type is still in the Paris Museum. In 1884 another Senegal terrapin was named *gasconi* by Rochebrune, whose plate shows the characteristic separation of pectorals reported by Parker (1936e, 609) from northern Gold Coast, Nigeria, etc. In fact this form appears to stretch in a

belt from Senegal right across to Eritrea from where Rüppell described *gehafie*, of which the Museum of Comparative Zoölogy possesses a cotype.

Intermediates between the two races occur in a wide area of the Anglo-Egyptian Sudan, Ethiopia, British and Italian Somaliland, Kenya (Kaliokwell River, Lake Rudolf, reported by Parker) and Uganda, and it is solely with a view to getting authors to assist in defining this area that I employ the name *olivacea* for this Mabira terrapin in which the pectorals are separated. One (M. C. Z. 40052) of the three terrapin from Kirui's, Mt. Elgon, referred by me to *subrufa* (as *galeata*) in 1936, also has separated pectorals. The condition is rare in East Africa, however, for these are the only instances out of thirty-eight specimens examined.

It is true that the condition of separated pectorals occurs sporadically further south, having been reported from South West Africa (Werner), Angola (Bocage), Transvaal (M. C. Z. 41942) and Madagascar (Mertens), but these do not invalidate the recognition of a northern race for they form such a minute percentage of the predominating typical form in South Africa, or race *wettsteini* in Madagascar.

Native name. *Njaba* (Luganda).

Coloration. Plastron wholly black like those from Kirui's, in sharp contrast with the yellow plastrons from the dry savanna areas.

PELUSIOS SUBNIGER (Lacépède)

Testudo subnigra Lacépède, 1789, Hist. Nat. Quadrup. ovip. Serpens, 2, Synopsis methodica: (Based on *La Noiratre* of Lacépède).

♀ (M. C. Z. 48013) Butiaba, U. 29.xi.38.

Synonymy. Sternfeld (1912c, pp. 200-201) records two terrapin from Lake Albert. One from Butiaba (misspelt Rutiala), he refers to *Pelomedusa galeata*, the other from Kassanje on the Congo shore he identified as *Sternotherus sinuatus*. Nieden (1913c, Mitt. Zool. Mus. Berlin, 7, p. 61) reexamined both specimens and found them to be *nigricans*, a name which is antedated by *subniger* Lacépède, though not by *subniger* Daudin.

Tornier (1896, p. 4) recorded *sinuatus* from Sesse Islands (misspelt Ussi), as did Boulenger (1909b, Ann. Mus. Civ. Stor. Nat. Genova (3) 4, p. 302). The latter author (1911c, loc. cit. (3), 5, p. 162) also recorded *derbianus* from Bussu, near Jinja, the only Uganda records for either species. Having doubts regarding them, I took the oppor-

tunity of examining this material — through the courtesy of Dr. Oscar de Beaux — when passing through Genoa. Both specimens are referable to *subniger*, for after careful investigation I have come to the conclusion that *derbianus* cannot be recognized as even sub-specifically distinct.

I (1923g, p. 930) made a similar mistake, repeating (1928d, p. 51) it when I referred a 360 mm. skeletal carapace from the Ruaha River to *nigricans* (i.e. *subniger*) for the characteristic youthful characters of a posteriorly serrated carapace and protruberances on the vertebral shields are blurred in this very old specimen. All these errors arose from the literal use of the keys supplied by Boulenger (1889a, p. 192) whose material was inadequate. We have then in East Africa only two members of the genus, both characterised by the suture between the abdominal shields being less, often considerably less, than the length of the anterior lobe of the plastron. A key for separating all the members of the genus will be found in my (1941d, p. 482) Revision of the Pelomedusidae.

PELUSIOS SINUATUS (Smith)

Sternotherus sinuatus A. Smith, 1838, Ill. Zool. S. Africa, Rept., pl. i: In rivers to the north of 25° S., South Africa.

6 (M. C. Z. 48014-9) Ujiji, T. T. 10.iii.39.

6 (M. C. Z. 48020-5) Mbanja, T. T. 27.iv.39.

Native name. *Ngongo* (Kimakonde).

Variation. The present material, coming as it does from points 750 miles apart on the western and eastern shores of Tanganyika Territory, is of interest as both series exhibit the outer edge of the pectoral usually longer than, sometimes equal to, occasionally shorter than, the outer border of the humeral; anterior lobe of the plastron longer than the abdominal suture in all because they are young, with carapace lengths of from 51 to 173 mm. in length. The height is included in this length from 2.39 to 2.68 times.

Coloration. All present the characteristic angular black pattern on the periphery of the yellow (brick red in four youngest) plastron.

Breeding. On March 10 and April 27 I was brought two hatchlings from each locality, all had a carapace length of 51 mm., but the two from Ujiji had a height of 21 mm., those from Mbanja of 19 mm.

Defence? The largest (173 mm.) of these terrapin, on being picked up and turned over, ejected a fine jet of fluid from its right axilla

or shoulder, I could not see clearly which, to a distance of one foot, a second jet followed from the region of insertion of the left fore leg, then a third from the right hind leg.

Habitat. The day following our arrival at Ujiji I visited the old cement cistern, an abandoned sugar refinery vat, from which I had removed two young *sinuatus* and two large *Rana occipitalis* on May 28, 1930. After waiting quietly for a few minutes I saw the stagnant surface broken by the snout of a terrapin which was as quickly withdrawn. I set the two skimmers to work to bail out the 150 gallons of water in the bottom of the vat. It took them three hours to drain it and we found only three terrapin the largest of the series. From this it might be deduced that one terrapin falls into the vat every three years, escape being impossible: fish being abundant in Ujiji makes it improbable that a hungry native would take the trouble to capture an odiferous terrapin. It was interesting to note that there were no frogs present; though many frogs and toads of different species were captured in the three adjacent vats which, being cracked, held only a few inches of water at most. It seems reasonable to assume, therefore, that those which had fallen into the vat containing terrapin, had been eaten by the latter.

AMYDIDAE

CYCLODERMA FRENATUM Peters

Cycloderma frenatum Peters, 1854, Monatsb. Akad. Wiss. Berlin, p. 216: Zambezi, Mozambique.

8 adult (M. C. Z. 48026-33) Kitaya, T. T. 24-31.iii.39.

36 eggs (M. C. Z. 48034) Kitaya, T. T. 27-28.iii.39.

Native names. *Litetamera* (Kiyao); *nahi* (Kimakonde).

Variation. The four alcoholics present a very different appearance from the four dried carapaces. The longitudinal dermal ridges, so conspicuous on the carapace of a young alcoholic cotype (M. C. Z. 21901), are absent from the smooth carapaces of the alcoholic adults, though perhaps indicated laterally. The entoplastral bony callosity exhibits surprising variability not only in size but in shape; the hyoplastral and hypoplastral callosities, said to be widely separated by Boulenger (1889a, p. 265) are rarely so in this series, normally they are closely in contact.

Coloration. In life. Above, very dark olive; except for one lateral line, the dark longitudinal lines on head and neck are not conspicuous

as figured by Peters (1882a, *Reise nach Mossambique*, 3, pl. i). Below, fleshy pink and china white much variegated with dusky marblings (still the case in alcohol). Perhaps this is the ♀ coloring (*vide* Peters, 1882a, pl. iia) while his pl. i may be based on ♂ coloring, it agrees well with the plastral appearance of our young Zambezi cotype.

Measurements. Length of carapace (without dermal margins) of largest gravid ♀ (M. C. Z. 48030) 390 mm., width of carapace (without margins) 310 mm. Weight 25 lbs.

Breeding. This ♀, taken April 27th, held 17 hard-shelled spherical eggs, each measuring 32 mm. in diameter, and ready for laying: in addition there were 55 smaller ova in various stages of development. The following day a second ♀ was found to hold 19 hard-shelled eggs, each approximately 31 mm. in diameter, besides numerous developing ova.

The fact that all four dissected specimens are females, suggests that the whole series are of that sex and so had fallen an easy prey to natives when they had ventured ashore to lay. I surprised one about twenty feet from the edge of a great hippo-harboring lagoon for which it was making in leisurely fashion. On seeing me it speeded up, I gave chase and we captured it in the water.

Diet. If an inference may be drawn from the fact that each of these turtles had a powerful, all-pervading fishy odour, it seems probable that they subsist largely on fish.

Parasites. Leaches were not uncommon on these mud turtles.

Enemies. Dr. J. O. Shircore, C.M.G., when Director of Medical Services in Tanganyika Territory, related to me how, about 8 a.m. one morning in 1926, he had encountered two small rufous otters. They were running around an almost dessicated puddle about a hundred yards from the right bank of the Kilombero River in Mahenge district; then he observed that they were attempting to eat one of these mud turtles which had withdrawn within its defences, at least this was the position when he walked up after shooting one of the otters. Subsequently he sent me a photograph of otter and turtle, the latter lying on its back, the former posed in much the same position as when shot.

Temperament. Contrary to my expectations, these turtles appear timid and inoffensive, withdrawing their heads and enclosing the hind limbs beneath their protective dermal valves at the slightest disturbance. When all is quiet, the head is protruded with the utmost caution by very gradual stages, to be withdrawn precipitately, to the

accompaniment of a species of snort, at the slightest sound or movement in their vicinity.

Encountering a native on a path one day, I stopped and spoke to him of my requirements in the way of small mammals, then passed on without paying any particular attention to the burden on his head which appeared to be a shallow cooking pot of sorts. He called after me to know if I had no need of turtles, then I saw that it was one of these, plastron uppermost, which he was carrying: the usual ring of twisted grass, commonly employed by porters to balance their loads, had been used to steady the strongly convex carapace. The docile reptile had been transported several miles in this manner.

Habitat. With head held well above the water, one of these turtles paddled swiftly past me when I was wading thigh-deep in the leech infested waters of a lake. I was stalking duck at the time and, lest I shatter it, had to wait till the turtle was twenty feet away before fring. However it dived and was not seen again.

TYPHLOPIDAE

TYPHLOPS SCHLEGELII MUCRUSO (Peters)

Onychocephalus mucruso Peters (part), 1854, Monatsb. Akad. Wiss. Berlin, p. 621: Makanga, Mozambique.

3 (M. C. Z. 48007-9) Mikindani, T. T. 15.iv.39.

2 (M. C. Z. 48090-1) Mbanja, T. T. 1.v.39.

2 (M. C. Z. 48092-3) Lake Rutamba, T. T. 8.v.39.

1 (M. C. Z. 48094) Lindi town, T. T. 1.vi.39.

Native names. *Nanumira kwiri* (Kimakonde); *lilenga* (Kimawiha.)

Variation. Midbody scale-rows 30-34; diameter included in length 24-40 times.

Coloration. The Mikindani series correspond to the gray *lincolatus* type of *punctatus*; the rest resemble the *congestus* variety of the same species, being orange with black blotches at Mbanja, blue gray with black blotches at Rutamba and Lindi.

Measurements. Largest (M. C. Z. 48090) measures 515 (510 + 5) mm., diameter 21 mm.

Enemies. As I was passing through some native gardens near Mbanja, I saw a woman with a ten-foot pole belabouring something on the ground at the back of her hut; her small daughter, awestruck, looked on from a safe distance. The object of attack was the large and helpless blind snake whose measurements are given above.

TYPHLOPS BLANFORDII LESTRADEI Witte

Plate 2, fig. 2.

Typhlops Lestradei Witte, 1933, Revue Zool. Bot. Afr., **23**, p. 206, figs. 1-3:
"Rubengera" *i.e.* Ruhengeri, Belgian Ruanda-Urundi.

Eggs and 8 (M. C. Z. 48070-8) Mushongero, U. 1-3.ii.39.

3 (M. C. Z. 48079-81) Nyakabande, U. 5.ii.39.

3 (M. C. Z. 48082-3) Kisenyi, B. R. 10.ii.39.

4 (M. C. Z. 48084-6) Idjwi Id., B. C. 17.ii.39.

Native names. *Kirumira habili* (Lukiga); *kiehulaehuzi* (Lulega).

Synonymy. Witte distinguishes *lestradei* from *blanfordii* Boulenger on four characters, all of which are now shown to be inconstant. *T. blanfordii* of Ethiopia had 30 midbody scale-rows, but so does *lestradei* occasionally; the eye in the former was distinct whereas in *lestradei* it is usually hidden, though sometimes sharply distinct (M. C. Z. 48071, etc.); the relative proportions of the head shields exhibit too much variability to be considered, the prefrontal, though usually larger than the supraoculars in *lestradei*, is sometimes subequal. There remains then, only the character of the rostral, as seen from below, being broader in the figure of *blanfordii* than in *lestradei*, in which it narrows rather abruptly towards the buccal border. Direct comparison, however, of a specimen of *blanfordii* from Harrar, Ethiopia, with our *lestradei* material, reveals no difference. There is, though, an average difference in midbody scale-rows and diameter, so I prefer to regard *lestradei* of western Uganda and Ruanda, as a race of *blanfordii* of Eritrea, Ethiopia (and possibly Kenya, *vide* Sternfeld).

It seems possible that *T. dubius* Chabanaud (1916f, Bull. Mus. Paris, **22**, p. 364) may take precedence over *lestradei*. This snake had 30 midbody scale-rows but its diameter into length was said to be about thirty times, both of which would put it in the synonymy of *punctatus*. The snout is allegedly similar to that of *blanfordii*, but as Chabanaud's holotype was young — only 147 mm. — the slightly more angular snout of adult *punctatus* would not be emphasized. Much turns on the type locality, said to be "Congo belge: volcans du Kivori (altitude 1,500 mètres)." This certainly appears to be the Kivu volcanoes, but I am informed that the collector was very careless in labeling his material and that insects labeled from the volcanoes, never came from there. There is a Kivari in Uganda to the east of Ruwenzori so perhaps the name is repeated somewhere in the Congo.

Chabanaud suggests that *dubius* may be a synonym of *adolfi* Sternfeld (1910e. p. 70), described as from "Fort Blus" but later (1912c, p. 263) corrected to Fort Beni. *T. adolfi*, however, seems certainly a synonym of *punctatus* for it not only had 30 midbody scale-rows, but a diameter which was included in its length twenty-five times. We have typical *punctatus* from Irumu which is just west of Fort Beni.

Measurements. Largest (M. C. Z. 48071) measures 670 (662 + 8) mm., diameter 15 mm., smallest (M. C. Z. 48081) measures 195 (192 + 3) mm., diameter 6 mm.

Coloration. A very glossy species. Above, gray, plumbeous, black or rich coppery or bronzy brown, the basal half of each dorsal scale lighter. Below, belly somewhat lighter (Mushongero), or median region of belly irregularly white (Kisenyi and Idjwi). When about to slough, sometimes uniformly opaquely white.

Breeding. At Mushongero, on February 3, 9 eggs, each measuring about 27 x 14 mm., in a ♀.

Diet. One very fat Idjwi snake held termite nymphs, the stomach contents of a second have been identified for me as larval and callow ants by Dr. P. J. Darlington.

Enemies. Remains of one in stomach of a *Miodon g. graueri* on Idjwi Id.

Habitat. I captured the Nyakabande series in the course of an hour by turning over the larger blocks of lava lying scattered about on the plain in the vicinity of the rest house. The snakes immediately attempted to slip down holes among the interstices of the lava and it was necessary to pry up the rocks to extricate the larger snakes, so tenaciously did they hold on. A Kisenyi snake was hoed up by a woman working in her garden. The fine Mushongero series were brought me in a basket by a native who said that he had dug them from termite hills, capturing them alive and uninjured.

TYPHLOPS PUNCTATUS PUNCTATUS (Leach)

Acontias punctatus Leach, 1819, in Bowdich, Miss. Ashantee, p. 493: Fantee, Gold Coast.

2 (M. C. Z. 48059-60) Mabira Forest, U. 5 & 14.xi.38.

5 (M. C. Z. 48061-5) Magrotto Mtn., T. T. 1-12.vii.39.

Distribution. It was curious that this common species was encountered only at the first and last camps of the entire trip, and

that it is the typical form and not the race *gierrai* which occurs at Magrotto.

Native names. *Mugora* (Luganda); *mkonko* (Kisambara).

Variation. Midbody scale-rows 26-28; diameter included in length 27-36 times; tail included in length 42-79 times; preocular in contact with upper labials.

Coloration. All of the *lincolatus* type, adults bronzy brown or gray, juveniles gray or black.

Measurements. Largest, a ♀ (M. C. Z. 48061), measures 557 (550 + 7) mm.

Breeding. On July 1, this largest snake held 19 small eggs measuring 10 x 5 mm. On July 12, a ♀ only 30 mm. smaller held 10 eggs of varying sizes, the largest measuring 17 x 7 mm.

Aestivation. Both the largest snakes, 540 and 557 mm. respectively, from Mabira and Magrotto, had extensive deposits of fat and were killed while crossing roads after heavy rain.

Folklore? Apropos previous remarks (*vide* Barbour & Loveridge, 1928, p. 108), it was a curious coincidence that, within an hour of my arrival at Magrotto, Mr. C. Clausen, Manager of the Estate, should produce a bottle containing one of these snakes, saying "Perhaps you can tell us about this creature. It was brought to me by a native who found it wriggling unharmed in a procession of *siafu* (driver ants); he split a bamboo with which he removed it from their line and brought it to me saying that the creature was their queen."

TYPHLOPS TETTENSIS RONDOENSIS subsp. nov.

Type. Museum of Comparative Zoölogy, No. 48,066, from Nchingidi, 2,700 feet, Rondo Plateau, southeastern Tanganyika Territory, collected by Arthur Loveridge, May 5, 1939.

Paratypes. Museum of Comparative Zoölogy, Nos. 48067-9 and a fifth specimen in the British Museum, all with same data as the type.

Diagnosis. Midbody scales in 24 (22-24 in *obtusus*) rows, snout very prominent, rounded.

Preocular in contact with second, third and fourth labials; distance between rostral and nostril about equal to distance between latter and posterior edge of nasal; midbody diameter 36 to 45 times in total length.

Belly bluish gray like back; rostral not extending back to an imaginary line connecting the anterior borders of the eyes (Tette, Zambezi, Mozambique) *t. tettensis*

Belly pure white; rostral extending back to an imaginary line connecting the anterior borders of the eyes (Rondo Plateau, Tanganyika Territory) *t. rondoensis*

Preocular in contact with second and third labials only; distance between rostral and nostril about one third of the distance between latter and posterior edge of nasal; midbody diameter 43 to 50 times in total length.

Belly pure white; eyes concealed, but rostral apparently not extending back to an imaginary line level with their probable position (Shire Highlands, Nyasaland) *t. obtusus*

Description. Midbody scale-rows 24 in all; midbody diameters included 36 to 45 times in total length; length of tails included 57 to 78 times in total length; agreeing with *tettensis* in all respects except for those characters indicated in the diagnosis, and an azygous scale split off from the second labial on one side of one specimen.

Coloration. In life. Above, blue-gray, thus closely resembling the young of *punctatus* and *schlegelii mueruso*. Below, china white. In alcohol while the bluish gray effect is retained, a close examination reveals each dorsal scale as blackish at the tip, white at the base, resulting in a lineolate appearance. Below, white. Thus they differ from *tettensis* which were: "Im leben grünblau, in Weingeist überall graugrün."

Measurements. Total length of Type, 228 (224 + 4) mm.; midbody diameter 5 mm. The paratypes range from 145 to 165.5 mm. in length, with diameters of from 4 to 5 mm. Probably none are fullgrown.

Habitat. All taken under logs at the forest edge and within two hundred yards of my camp, to be described in the final report.

Remarks. *T. tettensis* is known only from the types in the Berlin Museum and therefore unavailable at the moment of writing. The types of *T. obtusus* are in the British Museum and I am indebted to Mr. H. W. Parker for making comparison between them and a paratype of *rondoensis*, which he considers to be distinct from *obtusum*. It was he who pointed out the difference in position of the nostril, which is more anteriorly situated in the nasal plate in *obtusum*.

TYPHLOPS UNITAENIATUS UNITAENIATUS Peters

Typhlops (Letheobia) unitaeniatus Peters, 1878, Monatsb. Akad. Wiss. Berlin, p. 205, pl. ii, fig. 5: Teita, Kenya Colony.

1 (M. C. Z. 48058) Amboni, T. T. 14.vi.39.

Variation. Midbody scale-rows 24; diameter included in length 83 times.

Measurements. Total length 332 (307 + 25) mm., midbody diameter 4 mm.

Diet. Termites in its stomach.

Enemies. Taken from the stomach of a lizard-buzzard (*Kaupifalco monogrammica*) shot shortly after sunset: the snake could have been swallowed only very recently.

TYPHLOPS GRAUERI Sternfeld

Typhlops graueri Sternfeld, 1912, Wiss. Ergeb. Deut.-Zentral-Afrika-Exped. 1907-1908, 4, p. 264: Virgin forest behind boundary mountains northwest shore of Lake Tanganyika, Belgian Ruanda-Urundi.

7 (M. C. Z. 48051-7) Ujiji, T. T. 11-15.iv.39.

Variation. Midbody scale-rows 24; diameter included in length 67-75 times.

Measurements. Largest (M. C. Z. 48051) measures 366 (360 + 6) mm., midbody diameter 5 mm.

Habitat. I took three beneath rotting debris piled about the base of a mango tree in a *shamba* between township and shore; the rest in soil beneath garden refuse in plantations of bananas, etc. in nearby Ruanda, T.T., as in 1930 (*vide* Loveridge, 1933h, p. 212).

TYPHLOPS BRAMINUS (Daudin)

Eryx braminus Daudin, 1803, Hist. Nat. Rept., 7, p. 279: Bengal, India.

2 (M. C. Z. 48049-50) Lindi, T. T. 31.v.39.

Distribution. These constitute the fourth and fifth records of the occurrence of *braminus* along the coast of Tanganyika. My colleague, Mr. Shreve, recently found two (M. C. Z. 33602-3) in a collection from Chilpancingo, Mexico, so that it is incorrect to limit its distribution to Asia and the islands of the Indian Ocean.

Variation. Midbody scale-rows 20; diameter included in length 48-55 times.

Measurements. Larger (M. C. Z. 48049) measures 145 (141.5 + 3.5) mm., midbody diameter 3 mm.

Habitat. Found together beneath bundles of rotting grass stacked in native town near the Beach Hotel. Diligent search failed to uncover any more.

TYPHLOPS LUMBRICIFORMIS (Peters)

Onychocephalus (Letheobia) *lumbriciformis* Peters, 1874, Monatsb. Akad. Wiss. Berlin, p. 377: Zanzibar coast.

4 (M. C. Z. 48045-8) Amboni, T. T. 19.vi.39.

Variation. Midbody scale-rows 18; diameter included in length 61-72 times; tail included in length 55-65 times.

Measurements. Largest (M. C. Z. 48048) measures 360 (354 + 6) mm., midbody diameter 5 mm.

Habitat. Ploughed up by tractor in a sisal plantation on Amboni Estate, near Tanga.

LEPTOTYPHLOPIDAE

LEPTOTYPHLOPS CONJUNCTA CONJUNCTA (Jan)

Stenostoma conjuncta Jan, 1861, Arch. Zool. Anat. Fisiol., 1, p. 189: South Africa.

1 (M. C. Z. 48035) Kitaya, T. T. 5.iv.39.

Native name. *Nanumira kuwiri* (Kimakonde at Kitaya).

Variation. Midbody scale-rows 14; diameter included in length 45 times; tail included in total length 12 times.

Trinomials are used, following Bogert (1940, p. 13) who regards *distanti* as a race.

Measurements. Total length 135 (123 + 12) mm.; midbody diameter 3 mm.

LEPTOTYPHLOPS EMINI EMINI (Boulenger)

Plate 2, fig. 1.

Glauconia emini Boulenger, 1890, Ann. Mag. Nat. Hist. (6), 6, p. 91: Karagwe, Bukoba, Tanganyika Territory.

2 (M. C. Z. 48036-7) Bundibugyo, U. 20.xii.38.

5 (M. C. Z. 48038-42) Mbanja, T. T. 26.iv.39.

Native names. *Kikelere* (Luamba); *keechwa mugongo* (Lutoro); *mbitu* (Kimakonde at Mbanja where they did not know the name given me at Kitaya for *L. conjuncta*, and apply *mbitu* to amphibaenids also).

Variation. Midbody scale-rows 14; diameter included in length 40–45 times; tail included in length total 9–13 times.

Measurements. Largest, a ♀ (M. C. Z. 48037), measures 145 (131 + 14) mm., midbody diameter 3.25 mm.

Habitat. Two of the Mbanja series were taken just below the surface (rainy season) in uprooting rank grass and scraping over tent site.

LEPTOTYPHLOPS LONGICAUDA (Peters)

Stenostoma longicauda Peters, 1854, Monatsb. Akad. Wiss. Berlin, p. 621: Tete, Mozambique.

2 (M. C. Z. 48043–4) Mbanja, T. T. 27.iv.39.

Native name. *Mbitu* (Kimakonde, but see remarks under *L. emini*).

Variation. Midbody scale-rows 14; diameter included in length 72–81 times; tail included in total length 9–11 times.

Measurements. Larger measures 102 (93 + 9) mm., midbody diameter 1.25 mm.

BOIDAE

PYTHON SEBAE (Gmelin)

Coluber sebae Gmelin, 1788, Syst. Nat., 1, p. 1118: No type locality.

2 (M. C. Z. 48095–6) Ujiji, T. T. 10.iii.39.

1 (M. C. Z. 48097) Mikindani, T. T. 10.iv.39.

Distribution. The only other python seen was at Mubango, where I refused to purchase a heavy eight-foot specimen that had been dragged for four miles through the Mabira Forest, Uganda.

Native names. *Timba* (Luganda); *mbira* (Luamba); *nzilamiri* (Lutoro); *satu* (Kiyao); *hato* and *ihatu* (Kimakonde at Mikindani and Kitaya); *mbidi* (Kimakonde at Mbanja).

Variation. Midbody scale-rows 83–91; ventrals 274–278; anal entire; subcaudals 75–77.

Measurements. Largest (M. C. Z. 48095) measures 2500 (2170 + 330) mm.

Diets. The largest python disgorged a fowl when struck.

Parasites. Three nematodes (*Ophidascaris* sp.) from its stomach were preserved.

COLUBRIDAE

NEUSTEROPHIS OLIVACEUS OLIVACEUS (Peters)

Coronella olivacea Peters, 1854, Monatsb. Akad. Wiss. Berlin, p. 622: Tete, Mozambique.

2 (M. C. Z. 48098) Mushongero, U. 1.ii.39.

1 (M. C. Z. 48099) Idjwi Id., B. C. 3.iii.39.

1 (M. C. Z. 48100) Ujiji, T. T. 11.iii.39.

4 (M. C. Z. 48101-2) Magrotto Mtn., T. T. 3.vii.39.

Native names. *Bulifu* (Lukiga, but not distinguished from *Duberria*); *kashaveri* (Lulega).

Variation. Midbody scale-rows 19; ventrals 135-140; anal divided; subcaudals 46-67; labials 8, the fourth and fifth entering the orbit; preocular 1, rarely 2 (left side of M. C. Z. 48099 only); postoculars 3, rarely 2 (right side of M. C. Z. 48099 only); 5, rarely 4, infralabials in contact with an anterior sublingual.

Coloration. One Mushongero snake had the lateral edges of the ventrals impinged with magenta, the other with gray. The Idjwi Island reptile was uniform olive above, the olive only slightly impinging on the ventrals which were otherwise paler olive. The Ujiji ♀ was distinctly reddish with a broad, dark vertebral band, the red impinging on the lateral edges of the ventrals which were otherwise white.

Measurements. Largest, a ♀ (M. C. Z. 48162), measures 390 (280 + 110) mm. A larger ♂, as well as two others of the series, had lost the tip of its tail.

Habitat. One Mushongero snake was hoed up in grassland near the lake shore. It is interesting to note that both races occur on Magrotto, those listed above were brought to me by natives and may well have come from the long-cultivated areas lower down the mountain as those taken by myself at the forest edge had all the 17 midbody scale-rows of the montane forest race.

NEUSTEROPHIS OLIVACEUS ULUGURUENSIS Loveridge

Natrix olivacea uluguruensis Loveridge, 1935, Bull. Mus. Comp. Zoöl., 79, p. 7: Nyange, Uluguru Mountains, Tanganyika Territory.

6 (M. C. Z. 48103-5) Magrotto Mtn., T. T. 3-9.vii.39.

9 (Vienna Museum) Ugano, Matengo Highlands, T. T.

Distribution. I have included some material submitted by the Vienna Museum as it constitutes a southward extension of the range.

The race reaches Southern Rhodesia, however, for FitzSimons (1939b, Ann. Transvaal Mus. 20, p. 20), under the name *olivaceus*, records three snakes from the Chirinda Forest, Mt. Selinda, as having 17 midbody scale-rows.

Native name. *Nyoka usambia* (Kisambara, also for *Aparallactus weneri*).

Variation. Midbody scale-rows 17, except one (Vienna Mus.) with 16 and one with 15 (M. C. Z. 44093), both from Ugano. Heretofore the only example with 15 rows known to me, was from Pemba Island; perhaps the island race may not be recognisable, a point which can be definitely settled by someone on Pemba securing a series of these snakes. Ventrals 130-140; anal divided; subcaudals 63-83; labials 8, the fourth and fifth entering the orbit; preoculars 1 or 2 (latter in four of the Ugano series); postoculars 3, rarely 2 (M. C. Z. 48164 only); temporals 1 + 2, rarely 1 + 1 and 2 + 2 (Vienna specimens); 5, rarely 4, infralabials in contact with an anterior sublingual.

Coloration. A Magrotto ♂ was noted as having creamy-white ventrals, those of two ♀♀ were as bright yellow as those of *Aparallactus weneri*.

Measurements. Largest ♂ (M. C. Z. 48163) measures 373 (265 + 108) mm., largest ♀ (M. C. Z. 48165) 394 (275 + 119) mm. This refers to Magrotto series only, largest from Ugano (unsexed) measures 411 (287 + 124) mm.

Dict. A frog (*Arthroleptis xenodactylus*) in one.

Parasites. A nematode.

BOTHROPHTHALMUS LINEATUS LINEATUS (Peters)

Elaphis (*Bothrophthalmus*) *lineatus* Peters, 1863, Monatsb. Akad. Wiss. Berlin, p. 287: Guinea.

♂ (M. C. Z. 48106) Mabira Forest, U. 14.xi.38.

Distribution. The typical form ranges from French Guinea eastwards to the Mabira Forest, Kyagwe, where one has already been taken by Pitman (1936, p. 227). In Fernando Po and on the opposite mainland of southwestern Cameroon, the uniformly coloured race *brunneus* Günther (with *infuscatus* Buchholz & Peters, *modestus* Fischer, and *olivaceus* Müller, as possible synonyms) is given off.

Variation. Midbody scale-rows 23; ventrals 192; anal entire; subcaudals 72; labials 7, the fourth and fifth entering the orbit.

Coloration. Above, head white with fine black lines on top and side, the usual five vertebral and lateral coral red stripes separated

by the black ground colour. Below, throat white, rest of under-surface coral red.

Measurements. ♂ measures 670 (550 + 120) mm.

BOAEDON LINEATUS LINEATUS Duméril & Bibron

Boaedon Lineatum Duméril & Bibron, 1854, *Erpét. Gén.*, 7, p. 363: Gold Coast.

- 5 (M. C. Z. 48107-9) Mabira Forest, U. 14-18.xi.38.
- 1 (M. C. Z. 48110) Fort Portal, U. 19.xii.38.
- 1 (M. C. Z. 48111) Bugoye, U. 27.xii.38.
- 12 (M. C. Z. 48112-9) Nyakabande, U. 28-30.i.39.
- Eggs & 4 (M. C. Z. 48120-4) Mushongero, U. 1-2.ii.39.
- 9 (M. C. Z. 48125-9) Kisenyi, B. R.-U. 10-13.ii.39.
- 10 (M. C. Z. 48130-4) Idjwi Id., B. C. 23-28.ii.39.
- 10 (M. C. Z. 48135-9) Ujiji, T. T. 11-15.iii.39.
- 5 (M. C. Z. 48140-2) Kitaya, T. T. 25-31.iii.39.
- 14 (M. C. Z. 48143-53) Mikindani, T. T. 10-20.iv.39.
- 4 (M. C. Z. 48154-6) Mbanja, T. T. 27-30.iv.39.
- 15 (M. C. Z. 48157-69) Nchingidi, T. T. 10-19.v.39.
- 1 (M. C. Z. 48170) Siga Caves, T. T. 15.vi.39.
- 5 (M. C. Z. 48171-3) Amboni Estate, T. T. 19.vi.39.
- 14 (M. C. Z. 48174-84) Magrotto Mtn., T. T. 1-19.vii.39.

Native names. *Kifuta* (Luganda); *nyamutane* (Lukonjo); *namajina* (Lukiga); *namaragwe* (Kimwera); *nyika* (Kisambara); while the following Kimakonde names were given me: *namalutu* (at Kitaya), *nalihi* (at Mikindani), *mambala* and *ganganguru* (at Mbanja) which suggest that confusion with some other species exists.

Variation. Midbody scale-rows 27-33, there is an interesting tendency to have only 27-29 on the East Coast where only four out of fifty-eight snakes have 30 or 31, none has 33; on the other hand, in the Central Lake region only one out of fifty-two snakes has 33 and none has 27, all the rest having 29-31¹; ventrals 196-218, reflect the same tendency being 187-218 at coast and 196-235 in Lake region; anal entire; subcaudals 46-70, the coast alone embracing whole range; upper labials normally 8, the fourth and fifth entering the orbit, rarely 7, the fourth entering (1 ex.), or 8, the third, fourth and fifth (7 ex.), or 9, the fourth and fifth (2 ex.), or 9, the fourth, fifth and sixth (2 ex. one side only), or 9, the fifth and sixth (2 ex. one side only); 3 or 4, very rarely 1 or 2, lower labials in contact with the anterior sublinguals, in one snake the second sublabial on either side is excluded from contact with the sublinguals; loreal

¹ Cf. Loveridge, 1936j, p. 238, for similar comparison to the north.

present except in M. C. Z. 48109 where they are fused with the prefrontals; preoculars 1 (65 ex.) or 2 (39 ex.), the rest having an azygous combination, one snake (M. C. Z. 48181) lacking a preocular on the right side owing to fusion with the prefrontal; postoculars 2; temporals 1 + 2, rarely 1 + 1 (5 ex. at least on one side) or 1 + 3 (9 ex. at least on one side).

Coloration. In Mabira Forest an adult was olivaceous, a young one blackish. An adult ♀ from Ujiji decidedly greenish, a second specimen black. Another ♀ from Mikindani was pale brown above, a red bar from nostril through orbit becoming less distinct posteriorly, about five, irregular, longitudinal rows of red blotches on the dorsum also become less distinct posteriorly. Below, pure white.

Measurements. Largest ♂ (M. C. Z. 48157) measures 650 (540 + 110) mm.; largest ♀ (M. C. Z. 48135) measures 951 (835 + 116) mm.

Sexual dimorphism. The ♂♂ have a lower ventral and higher subcaudal count, viz. 35 ♂♂ range from 191–212 ventrals and 57–70 subcaudals, while 19 ♀♀ range from 205–239 ventrals and 46–53 subcaudals, the tails of the ♀♀ being noticeably shorter.

Breeding. The following records of developing eggs were made. Ujiji, March 11, 1939, ♀ held 2 eggs measuring 20 x 10 mm. Kitaya, March 25, 1939. ♀ held 8 eggs measuring 15 x 9 mm. While at Mushongero, February 2, 1939, 6 eggs measuring 40 x 24 mm. were found in a termitarium. They contained young measuring 220 (185 + 35) mm. which, on hatching a month later, measured 234 (205 + 29) mm.

Dict. Rodent fur in a Kisenyi snake, that of a jumping rodent in a Mikindani reptile. Rats (*Rattus r. kijabius*) recovered from Fort Portal and Ujiji specimens; pigmy mice (*Leggada spp.*) from Mabira, Ujiji and Kitaya snakes; a mouse (*Lophuromys a. aquilus*) at Nyakabande; an arboreal rat (*Thamnomys s. surdaster*) in a Magrotto snake; and a tree mouse (*Dendromus l. kivu*) in one of the Idjwi Island series.

A gecko (*Hemidaectylus mabouia*) with tail intact in a Kitaya snake; a young lizard (*Gerrhosaurus n. nigrolincatus*) and adult skink (*Ablepharus wahlbergii*) in Nchingidi specimens. Of frogs *Rana m. mascareniensis* at Siga Caves, *Arthroleptis adolfi-friederici* on Magrotto Mountain, *A. s. stenodaectylus* and *Hemisis m. marmoratum* in Mikindani snakes.

It was noticeable that the pigmy mice, lizards, and frogs were swallowed by the smaller snakes, the larger rodents, such as the

mole rat (in M. C. Z. 48135) measuring 350 (190 + 160) mm., by the adult reptiles.

Parasites. Ticks on Nyakabande, Ujiji, and Kitaya snakes; worms (*Ophidascaris sp.*) in Kisenyi and (*Polydelphis sp.*) in Amboni specimens.

Habitat. Under palm fronds and other vegetation, as well as under logs; others were taken in native huts according to their captors.

BOAEDON OLIVACEUS (Duméril)

Holuropholis olivaceus A. Duméril, 1856, Rev. Mag. Zool. (2), 8, p. 466: Gaboon.

1 (M. C. Z. 48185) Mabira Forest. U. 5.xi.38.

5 (M. C. Z. 48186-90) Bundibugyo, U. 22.xii.38.

Native name. Kiliba (Luamba).

Variation. Midbody scale-rows 27-31; ventrals 208-224; anal entire; subcaudals 41-48; labials 8, the fourth and fifth, or (M. C. Z. 48187) third, fourth and fifth entering the orbit; frontal once to once and a quarter as long as broad, as long as, or shorter, than its distance from end of snout.

Measurements. Largest ♀ (M. C. Z. 48190) measures 782 (695 + 87) mm.

Breeding. One Bundibugyo snake held very small eggs, in another they measured 39 x 18 mm., but several were smashed.

Diet. Mouse fur in stomach of latter.

LYCOPHIDION MELEAGRIS Boulenger

Lycophidium meleagris Boulenger, 1893, Cat. Snakes Brit. Mus., 1, p. 337, pl. xxi: Ambriz and Ambrizette, Angola.

4 (M. C. Z. 48267-70) Magrotto Mtn., T. T. 8-21.vii.39.

Variation. Midbody scale-rows 15; ventrals 149-160; anal entire; subcaudals 25-36; labials 8, the first in contact with the posterior nasal, third, fourth and fifth entering the orbit.

Coloration. A young ♂ reminded me of *L. c. uzunguensis* in that a salmon pink band follows the contour of the snout from eye to eye, being narrowly edged above with buff and below with black. An adult ♂, ♀, and a young ♀ exhibited only the buff band. In all, the slightly bluish white flecks on the glossy black scales of the back and flanks present a very handsome appearance.

Measurements. Larger ♂ (M. C. Z. 48268) measures 301 (260 + 41) mm.; larger ♀ (M. C. Z. 48267) measures 303 (275 + 28) mm., both

being exceeded slightly by Usambara and Uluguru specimens in the collection.

Diet. The stump of a tail and two eggs of the montane forest skink (*Lygosoma kilimense*).

Defence. On being disturbed these snakes make no attempt to bite but flatten themselves greatly, often coiling as well.

Habitat. In East Africa this is a truly sylvicoline species and I captured all the above snakes among drifted leaves between buttress roots of giant trees in the depths of the forest.

LYCOPHIDIION CAPENSE ORNATUM Parker

Lycophidion ornatum Parker, 1936, Novit. Zool., 40, p. 122: Congulu, Angola.

- 1 (M. C. Z. 48191) Bugoye, U. 23.i.39.
- 1 (M. C. Z. 48303) Nyakabande, U. 27.i.39.
- 1 (M. C. Z. 48192) Mushongero, U. 2.ii.39.
- 57 (M. C. Z. 48193-249) Idjwi Id., B. C. ii.39.
- 1 (M. C. Z. 48250) Ujiji, T. T. 11.iii.39.

Distribution. New for Tanganyika Territory and Kenya Colony (see below).

Native name. *Busugu* (Lulega). Thought to be the young of *Boaedon lineatus* by Kigezi natives.

Corrigenda. This snake is readily distinguishable from *L. c. capense* in the field by the double series of dark spots along the entire length of the dorsum, difficult to detect after formalin preservation. I (1936j, p. 241) commented on this under *L. c. capense* where I erroneously stated that: "This difference is not correlated with any scale characters enabling me to separate them." Parker (1936c, p. 122) with greater perspicacity detected that the first labial is constantly separated from the postnasal in *ornatum*, whereas it is in contact in *capense*. Unfortunately my paper was in press before Parker's reached me. The specimens which should be removed from *capense* in the citation (1936j, p. 241) given, are:

- 1 (M. C. Z. 39966) Kigezi district, U.
- 3 (M. C. Z. 40468-70) Sipi, Mt. Elgon, U.
- 4 (M. C. Z. 40471-3) Kaimosi, K. C.

The other Mount Elgon specimen, from the deforested Sabei region, is typical *capense*. I regard *L. c. ornatum* as a forest form with headquarters in the high country of the Central Lake region much of which has undergone deforestation within living memory. Both forms meet at Ujiji.

My reasons for regarding *ornatum* as a race of *capense*, rather than a full species, is on account of the spotted snake from Bugoye, eastern slopes of Ruwenzori, which has the first labial and post nasal *meeting* in a point, as have also occasional *capense* from Gulu, Acholi, and elsewhere.

Variation. The uniformity exhibited by this extensive series is remarkable, leaving little to add to the exhaustive description furnished by Parker.

Midbody scale-rows 17; ventrals 180-205; anal entire; subcaudals 34-49; labials 8, the first separated from the postnasal except for the Bugoye snake, the third, fourth and fifth entering the orbit, or very rarely 7 labials, the third and fourth entering the orbit (2 ex.); 4 or 5 lower labials in contact with an anterior sublingual; loreal 1; preocular 1; postoculars 2; temporals 1 + 2, rarely 1 + 1 (1 ex.) or 2 + 2 (4 ex.).

Measurements. Largest ♂ (M. C. Z. 48196) measures 405 (346 + 59) mm.; largest ♀ (M. C. Z. 48235) measures 475 (406 + 69) mm.

Sexual dimorphism. Unfortunately there is a slight overlap in the number of subcaudals, viz.

23 ♂ ♂ range from 180-198 ventrals and 41-49 subcaudals,

37 ♀ ♀ range from 188-205 ventrals and 34-43 subcaudals.

Breeding. At Mushongero, on February 2, a batch of 5 eggs measuring 21 x 15 mm. containing well advanced embryos, were found in a termitarium (*vide* native). They hatched on Idjwi Island on March 6, at which time one of the hatchlings (M. C. Z. 48192) measured 145 (125 + 20) mm. The rest were released.

On Idjwi Id., February 21, a ♀ held 4 eggs measuring 9 x 5 mm.

“ “ 22 “ 4 “ “ 9 x 5 mm.

“ “ 22 “ 4 “ “ 14 x 6 mm.

“ “ 22 “ 21 “ “ 20 x 9 mm.

“ “ 25 “ 3 “ “ 10 x 5 mm.

“ “ 25 “ 5 “ “ 12 x 6 mm.

“ “ 28 “ 3 “ “ 26 x 10 mm.

“ “ 28 “ 3 “ “ 10 x 5 mm.

Diet. A lizard (*Algiroides boulengeri*) in one, a skink (*Mabuya m. maculilabris*) in another, and 22 skinks (*Lygosoma blochmanni*) in almost as many other snakes, showing that this little skink constitutes the principal food of *L. c. ornatum* on Idjwi Island.

Habitat. I caught this species on paths right in the forest and its

¹Probably one or more eggs had been laid already.

prey are principally found on the sunny banks at the sides of such paths. There is little or no forest, however, in the Uganda and Tanganyika localities whence single specimens were taken.

LYCOPHIDION CAPENSE CAPENSE (Smith)

Lycodon capense A. Smith, 1831, S. Afr. Quart. Journ., 1, p. 18: Kurrichane, *i.c.* Rustenberg district, Transvaal.

- 1 (M. C. Z. 48251) Butiaba, U. 5.xii.38.
- 2 (M. C. Z. 48252-3) Ujiji, T. T. 10.iii.39.
- 1 (M. C. Z. 48254) Mikindani, T. T. 18.iv.39.
- 7 (M. C. Z. 48255-9) Mbanja, T. T. 26-30.iv.39.
- 4 (M. C. Z. 48260-3) Nchingidi, T. T. 18.v.39.
- 2 (M. C. Z. 48264-5) Amboni Est., T. T. 24.vi.39.
- 1 (M. C. Z. 48266) Opp. Kilindini, K. C. 25.vii.39.

Native names. *Namaluto* (Kimakonde at Mikindani); *lukunguviro* (Kimakonde at Mbanja).

Variation. Midbody scale-rows 17; ventrals 184-211; anal entire; subcaudals 37-57; upper labials 8, the first in contact with the post-nasal except on one side of an Mbanja snake, the third, fourth and fifth entering the orbit; postoculars 2, except on right side of M. C. Z. 48252; temporals 2 + 2 or 1 + 1 (M. C. Z. 48265 only).

Coloration. Agree with the typical form in having the throat more or less white, except for the Ujiji snakes which are dark, agreeing in this respect with the Zanzibar race *aeutirostris*!

Measurements. Largest ♂ (M. C. Z. 48264) measures 408 (345 + 63) mm.; largest ♀ (M. C. Z. 48252) measures 467 (425 + 42) mm.

Sexual dimorphism. Subcaudal range in 9 ♂ ♂ is 46-57, in 8 ♀ ♀ it is 37-41.

Breeding.

At Mbanja, April 26, a ♀ held 5 eggs measuring 24 x 10 mm.

“ “ 28, “ 5 “ “ 10 x 4 mm.

“ “ 30, “ 4 “ “ 10 x 4 mm.

“ “ 30, “ 4 “ “ 23 x 8 mm.

The last mentioned snake was sloughing and paired with a male which was so entrapped in the slough that it could not free itself! At Nchingidi, May 18, a very young snake, measuring only 182 (160 + 22) mm. was taken.

Diet. Young lizards (*Gerrhosaurus n. nigrolineatus*) in Mikindani and Amboni snakes; adult skinks (*Mabuya maculilabris*) in Amboni and Gulu, Acholi (Pitman coll.) reptiles; an adult *M. striata* in the largest

Ujiji female, *M. v. varia* in Mbanja and Nchingidi snakes and an *Ablepharus wahlbergii* in a very young Mbanja specimen.

Habitat. Under palm fronds or garden refuse at Butiaba, Mikindani and opposite Kilindini.

LYCOPHIDION CAPENSE > < ACUTIROSTRE Günther

Lycophidion intermediates between *capense* and *acutirostre* Loveridge, 1933, Bull. Mus. Comp. Zoöl., 74, p. 234: Zanzibar and Bagamoyo, Morogoro and Kilosa in Tanganyika Territory.

3 (Vienna Mus.) Ugano, T. T. 1935 (H. Zerny).
juv. ♀ (M. C. Z. 48271) Mbanja, T. T. 27.iv.39.

Distribution. I have included some recently examined Zerny material as these two localities in extreme southern and southeastern Tanganyika Territory constitute the most southerly records of this form. Moreover typical *L. c. capense* occurs in both these localities!

Native name. *Lukuuguviro* (Kimakonde at Mbanja for both forms).

Variation. Midbody scale-rows 17; ventrals 161-172; anal entire; subcaudals 23-37; labials 8, the first in contact with the posterior nasal, the third, fourth and fifth entering the orbit. Agreeing in their low ventral and subcaudal counts and black throat with this race as defined in the citation given above.

Measurements. The juvenile ♀ measures 151 (137 + 14) mm.

Diets. A skink (*Ablepharus wahlbergii*) in this tiny snake.

[MEHELYA CAPENSIS CAPENSIS (Smith)]

Heterolepis capensis A. Smith, 1847, Ill. Zool. S. Africa, Rept., pl. lv: Eastern parts of Cape Province, South Africa.

Distribution. When writing the revision of this genus, I (1939c, p. 144) was surprised at the absence of records of this race between the Usambara Mountains in Tanganyika and Delagoa Bay in Mozambique. At Lindi I met Dr. L. Stirling of the Universities Mission who described this snake to me beyond the shadow of a doubt as occurring southwest of Lindi at Lulindi, where there is a remnant of forest. He encountered one in the church at 7 p.m. while another was killed in the bed of a native child. The latter, a boy aged 12, felt something moving about his feet so got up. Both reptiles were large.

[PSEUDASPIS CANA (Linnaeus)]

Coluber canus Linnaeus, 1758, Syst. Nat., ed. 10, 1, p. 221: "Indiis."

Breeding. On South Kinangop, Kenya Colony, Mrs. Nightingale Jr. asked me the name of a large four-foot olive snake, which had thirty live chequered young in its oviducts, that they had killed.

CHLOROPHIS CARINATUS Andersson

Chlorophis carinatus Andersson, 1901, Svenska Vetensk.-Akad. Hand., 27, No. 5, p. 9: Cameroon.

1 (M. C. Z. 48275) Budongo Forest, U. 29.xi.38.

2 (M. C. Z. 48276) Idjwi Island, B. C. 22.ii.39.

Native name. *Lushangabanyeri* (Lulega).

Variation. Midbody scale-rows 13; ventrals 141-158; anal entire; subcaudals 76-86; labials 9, the fourth, fifth and sixth entering the orbit; temporals 2 + 2, rarely 2 + 1.

Coloration. ♂ (M. C. Z. 48276) Above, dark olive, head uniform, the vertebral series of scales edged baso-laterally with very pale blue, the outer scales on the outer baso-lateral side only also pale blue, tail uniform. Below, chin white, throat yellowish, rest of under-surface uniformly pale green.

Measurements. Large ♂ (M. C. Z. 48276) measures 556 (410 + 146) mm.

CHLOROPHIS MACROPS (Boulenger)

Oligolepis macrops Boulenger, 1895, Ann. Mag. Nat. Hist. (6), 16, p. 171: Usambara Mountains, Tanganyika Territory.

3 ♀ ♀ (M. C. Z. 48272-4) Nchingidi, Rondo Plateau, T. T. 12.v.39.

Corrigenda. In Barbour & Loveridge, 1928, Mem. Mus. Comp. Zoöl., 50, p. 117, lines 7, 8, and 23, for ventrals 169 read 149, for subcaudals 122, read 112. The erroneous figures result from the inclusion of three specimens of *C. neglectus* in the extensive series of *typotypic macrops*.

Variation. Midbody scale-rows 13; ventrals 135-141; anal divided; subcaudals 69-84; labials 8, the fourth and fifth entering the orbit, or 9, the fifth and sixth entering (on left side of M. C. Z. 48273 only); temporals 1 + 1 or 1 + 2.

Coloration. The largest ♀ exhibited a very peculiar coloration for a member of this genus. Above, uniform brown except for a few scales which resemble the laterals in being edged with black. Below, white, each ventral with a dull blood-red blotch above the keel (*i.e.* laterally) and a less distinct smaller one below the keel (*i.e.* abdominally); tail dull white with each subcaudal faintly tinged with blood red basally.

Measurements. Largest ♀ (M. C. Z. 48272) measures 697 (525 + 172) mm.

Diet. A chameleon (*Brookesia brevicaudata*) in largest, tail of a skink, also a frog (*Arthroleptis s. lönnbergi*) in another.

CHLOROPHIS HOPLOGASTER (Günther)

Ahaetulla hoplogaster Günther, 1863, Ann. Mag. Nat. Hist. (3), 11, p. 284: Port Natal, *i.e.* Durban, Natal.

♀ (M. C. Z. 48277) Mabira Forest, U. 12.xi.38.

Native name. *Newandegala* (Luganda).

Variation. Midbody scale-rows 15, ventrals without keels 157; anal divided; subcaudals 92; labials 8, the fourth and fifth entering the orbit; temporals 1 + 1.

Measurements. ♀ measures 880 (627 + 253) mm.

Breeding. Oviducts held six eggs measuring 30 x 10 mm.

Diet. A lizard (*Algiroides africanus*) in stomach.

CHLOROPHIS NEGLECTUS (Peters)

Philothamnus neglectus Peters, 1866, Monatsb. Akad. Wiss. Berlin, p. 890: Praso Boror, Mozambique.

2 (M. C. Z. 48301-2) Ujiji, T. T. 10.iii.39.

1 (M. C. Z. 48304) Kitaya, T. T. 24.iii.39.

2 (M. C. Z. 48305-6) Mikindani, T. T. 14.iv.39.

♂ (M. C. Z. 48307) Lake Rutamba, T. T. 8.v.39.

♂ (M. C. Z. 48308) Nchingidi, T. T. 14.v.39.

♂ (M. C. Z. 48309) Amboni Estate, T. T. 19.vi.39.

4 (M. C. Z. 48310-2) Magrotto Mtn., T. T. 1.vii.39.

Native names. *Namalanga* (Kimakonde); *nyoka amani* (Kisambara).

Variation. Midbody scale-rows 15; ventrals with lateral keels 146-152; anal divided; subcaudals 85-99; labials 8, the fourth and fifth

entering the orbit; preocular 1, rarely 2 (one side of one snake only); postoculars 2; temporals 1 + 1, rarely 1 + 2 or 2 + 3 (M. C. Z. 48305).

Coloration. A Mikindani snake was green above with seven short, dark, transverse bars on nape giving it somewhat the appearance of a *Causus resimus*. The young Rutamba snake was rich velvety green with a brown, transverse bar on nape followed by a series of nine, more or less paired, brown spots.

Measurements. Largest ♂ (M. C. Z. 48302) measures 657 + (462 + 185 +) mm., tail tip missing.

Diet. Frogs (*Arthroleptis s. stenodactylus*) in the Kitaya snakes.

Habitat. A young one in a heap of debris beneath a mango tree at Mikindani, another was taken near my tent at Kitaya, following heavy rain.

CHLOROPHIS IRREGULARIS (Leach)

Coluber irregularis Leach, 1819, in Bowdich, Miss. Ashantee, p. 494: Ashanti, Gold Coast.

1 (M. C. Z. 47880) Mabira Forest, U. 8.xi.38.

4 (M. C. Z. 48278-80) Bundibugyo, U. 21-24.xii.38.

3 (M. C. Z. 48281-3) Mihunga, U. 16.i.39.

Eggs 13 (M. C. Z. 48285-95) Mushongero, U. 1-4.ii.39.

2 (M. C. Z. 48296) Kisenyi, B. R. 10.ii.39.

6 (M. C. Z. 48297-9) Idjwi Id., B. C. 16-28.ii.39.

Native names. *Newandagala* (Luganda); *salalu* (Luamba); *nyarubabi* or *nyaruteti* (Lutoro); *chicenzi* (Lukonjo); *muchenganyi* (Lukiga); *lushangabanyeri* (Lulega).

Variation. Midbody scale-rows 15; ventrals 154-167; anal divided; subcaudals 92-117; labials 9, rarely 8, the fourth, fifth and sixth or fifth and sixth (M. C. Z. 48298 left side only) entering the orbit; temporals 1 + 1 (on 43 sides) or 1 + 2 (on 15 sides).

Measurements. Largest ♂ (Idjwi Id.) measures 845 (575 + 270) mm.; largest ♀ (M. C. Z. 48278) measures 1058 (735 + 323) mm.

Breeding.

Bundibugyo, December 21, a ♀ held 5 eggs measuring 22 x 7 mm.

Mihunga, January 16, " 5 " 32 x 11 & 28 x 12 mm.

Kisenyi, February 10, " 8 " 25 x 10 mm.

In addition, at Mushongero, on February 1, a native brought me 193 eggs which he allegedly dug from two termitaria. One batch of 8 eggs measuring 25 x 14 mm., another of 8 measured 39 x 17 mm., while

3 eggs selected from different batches measured 43 x 18 mm., 30 x 18 mm., and 29 x 18 mm. respectively, their diameter evidently conditioned by the girth of the parent; each contained an embryo nearly ready for hatching, such measuring 203 (143 + 60) mm., and on hatching a few weeks later a ♂ measured 260 (180 + 80) mm., and a ♀ measured 249 (180 + 69) mm.

Diet. A large lizard (*Lacerta jacksoni*) two young toads (*Bufo regularis*) and three yellow sedge frogs (*Hyperolius schubotzi*) in three Idjwi Island snakes, a frog (*Rana fuscigula*) in a Mushongero snake.

Parasites. Nematodes (*Amphicaecum sp.* and *Ascaroidea sp.*) in an Idjwi Island snake.

Temperament. A snake, losing its hold on a palm frond overhanging a path in the public garden on the Lake shore at Kisenyi, fell at my feet. As I seized it, the snake gaped till its jaws were in almost a single plane as it struck, the teeth drew little blood.

Habitat. At Mihunga I captured several in a swamp where they were undoubtedly hunting frogs.

CHLOROPHIS HETEROLEPIDOTUS (Günther)

Ahaetulla heterolepidota Günther, 1863, Ann. Mag. Nat. Hist. (3), 11, p. 286: Africa.

♀ (M. C. Z. 47809) Bukakata, U. 7.ix.38. (C.R.S.Pitman).

4 (M. C. Z. 47841-4) Lira, Lango, U. iv-viii.38. (C.R.S.P.).

♂ (M. C. Z. 48284) Nyakabande, Kigezi, U. 28.i.39.

♂ (M. C. Z. 48300) Kitaya, Ruvuma River, T. T. 24.iii.39.

Variation. Midbody scale-rows 15; ventrals 173-185; anal divided; subcaudals 107-124; labials 9, rarely 8 (M. C. Z. 47809 left side only), the fourth, fifth and sixth entering the orbit; temporals 1 + 1, rarely 1 + 2.

This snake, so apt to be confused with other members of the genus, is recognizable by its extremely slender form anteriorly and higher ventral count. The highest ventral count is for the Kitaya snake, the highest subcaudal for the Nyakabande reptile.

Measurements. Largest ♂ (M. C. Z. 48300) measures 730 (492 + 238) mm.; largest ♀ (M. C. Z. 47842) measures 586 (400 + 186) mm.

Diet. A sedge frog (*Hyperolius rossii*) in each of the two Lira males, a yellow frog (*Hyperolius sp.*) in the Nyakabande snake, a frog in the Kitaya specimen.

PHILOTHAMNUS SEMIVARIEGATUS SEMIVARIEGATUS Smith

Philothamnus semivariiegatus A. Smith, 1849, Ill. Zool. S. Africa, Rept., pls. lix, lx, lxiv: Bushman's Flats and Kurrichane, *i.e.* Rustenberg district, Transvaal.

- 1 (M. C. Z. 47820) Katwe, U. x.38. (C.R.S.Pitman).
 1 (M. C. Z. 48313) Budongo Forest, U. 3.xii.38.
 1 (M. C. Z. 48314) Bundibugyo, U. 22.xii.38.
 1 (M. C. Z. 48315) Ujiji, T. T. 15.iii.39.
 8 (M. C. Z. 48316-21) Kitaya, T. T. 25.iii.-3.iv.39.
 6 (M. C. Z. 48322-5) Mikindani, T. T. 15-21.iv.39.
 2 (M. C. Z. 48326-7) Mbanja, T. T. 1 & 5.v.39.
 1 (M. C. Z. 48328) Siga Caves, T. T. 14.vi.39.
 3 (M. C. Z. 48329-31) Amboni Est., T. T. 17.vi.39.
 2 (M. C. Z. 48332-3) Magrotto Mtn., T. T. 3.vii.39.

Native names. Not distinguished from *C. irregularis* in Luamba and Lutoro; *kisumera* (Kimakonde at Kitaya); *namahamba* (Kimakonde at Mikindani and Mbanja); *nawirangira* (Kimawiha); *ngoe* (Kisambara, but supposed to be young of green mamba, *D. angusticeps*).

Variation. Midbody scale-rows 15; ventrals 164-193; anal divided; subcaudals 127-157; labials 8, the fourth and fifth entering orbit (3 odd sides), or 9, the fourth, fifth and sixth (23 sides), or 9, the fifth and sixth (22 sides), or 10, the fifth, sixth and seventh (3 sides), or 10, the sixth and seventh (1 side) entering orbit; temporals 2 + 2 (41 sides), or 2 + 1 (5 sides), or 1 + 2 (5 sides), or 1 + 1 (1 side).

Coloration. At Kitaya snakes with blue heads as well as with green heads were present, one of the latter had the anterior third of the body transversely barred with blue. At Mikindani most specimens were uniformly green, being distinguished from *Chlorophis neglectus* only by the subcaudal keel and scale-counts; one had a bluish head.

Measurements. Largest ♂ (M. C. Z. 48333) measures 1113 (690 + 423) mm., largest ♀ (Mikindani) measures 1162 (745 + 417) mm.

Sexual dimorphism. None in scalation, for the 10 ♂ range from 164-193 ventrals and 127-156 subcaudals, while 16 ♀ range from 167-192 ventrals and 128-157 subcaudals.

Breeding.

Budongo Forest, December 3, a ♀ held 4 eggs measuring 30 x 8 mm.

Kitaya,	March 25,	" 7 "	" "	21 x 7 mm.
"	April 3,	" 6 "	" "	11 x 3 mm.
Mikindani,	April 20	" 5 "	" "	28 x 8 mm.
"	April 21	" 3 "	" "	29 x 8 mm.
Mbanja	May 1,	" 5 "	" "	20 x 5 mm.
"	May 5,	" 5 "	" "	24 x 6.5 mm.

Diect. Geckos (*Lygodactylus p. gutturalis*) in the Katwe and Budongo snakes, *L. g. grotci* in Ujiji, Mikindani and Mbanja specimens, *Hemidactylus mabouia* in Kitaya and Mbanja reptiles; three young tree frogs (*Leptopelis concolor* in a Siga snake, *Megalixalus brachynemesis* in one from Kitaya, *Hyperolius parkeri* in a juvenile which I captured in sedges growing from knee-deep water in an Amboni swamp.

Parasites. Nematodes (*Thubunaca sp.*, probably *T. asymmetrica*) and immature cestodes in a Mikindani snake.

Habitat. I shot a female with truncated tail as it was basking about a knot hole of an almost vertical tree trunk at Kitaya.

GASTROPYXIS SMARAGDINA (Schlegel)

Dendrophis smaragdina Schlegel, 1837, Essai Phys. Serp., 2, p. 237: Gold Coast.

♀ (M. C. Z. 48334) Bundibugyo, U. 22.xii.38.

Native names. Not distinguished from *Chlorophis irregularis* in Luamba and Lutoro.

Variation. Midbody scale-rows 15; ventrals 160; anal divided; subcaudals 144; labials 9, the fifth and sixth entering orbit; postoculars 2-3; temporals 1 + 2.

Measurements. ♀ measures 1143 (715 + 428) mm.

Breeding. Oviducts held 4 eggs measuring 23 x 7 mm.

HAPSIDOPHYRYS LINEATA Fischer

Plate 2, fig. 3.

Hapsidophrys lineata Fischer, 1856, Abhand. Nat. Ver. Hamburg, 3, p. 111, pl. ii, fig. 5: Elmine, Gold Coast.

♂ (M. C. Z. 48335) Budongo Forest, U. 22.xi.38.

♀ (M. C. Z. 48336) Kibale Forest, U. 14.xii.38.

Variation. Midbody scale-rows 15; ventrals 159-161; anal entire; subcaudals M and 104; labials 8, the fourth and fifth entering orbit; postoculars 2-3; temporals 2 + 2.

Coloration. ♀. Above, rich velvety green, each scale heavily edged with black forming ten black lines on dorsum converging to form five broad ones on tail. Below, a paler, slightly yellowish, green, the lateral keels and edges of the ventrals darker, almost bluish, a median black line along tail.

Measurements. ♂ measures 985+ (760 + 225+) mm., tail tip missing; ♀ measures 983 (705 + 278) mm.

Breeding. ♀ held 2 eggs measuring 25 x 6 mm.

Dict. A frog (*Phrynobatrachus dendrobates*) in stomach of male, frog's bones in that of female.

Temperament. The female was moving slowly along a branch of a sapling in deep forest. It was only five feet from the ground and as I took it by the neck it made no attempt to bite, nor later when subjected to considerable provocation during a quarter-of-an-hour's posing for its photograph.

RHAMNOPHIS AETHIOPISSA ELGONENSIS Loveridge

Rhamnophis aethiopissa elgonensis Loveridge, 1929, Bull. U. S. Nat. Mus. **151**, p. 24: Yala River nr. Kaimosi, Kakamega, Kenya Colony.

♂ (M. C. Z. 48343) Mabira Forest, U. 11.xi.38.

♂ (M. C. Z. 48344) Kibale Forest, U. 17.xii.38.

Synonymy and a correction. All the Uganda material referred to *ituriensis* by Pitman (1936-1938) are really *elgonensis*, this also applies to his fine colored plate. To avoid further confusion of the forms the following key, based on all records in the literature and a detailed examination of M. C. Z. material, is given.

1. Midbody scale-rows 13; anal entire; subcaudals less than 116; maxillary teeth 30 + 3 to 35 + 3.....*batesii*
Midbody scale-rows 15-19; anal divided; subcaudals more than 116; maxillary teeth 17 + 3 to 20 + 3.....2
2. Midbody scale-rows 17, very rarely 15, 16, or 19; lower postocular in contact with 3 upper labials; range: French Guinea east to the western Belgian Congo.....*a. aethiopissa*
Midbody scale-rows 15, very rarely 17; lower postocular in contact with 2 or 3 upper labials; range: eastern Belgian Congo to western Kenya Colony.....3
3. Subcaudals 134-150; normally upper labials 8, sometimes 7; range: Ituri region of eastern Belgian Congo.....*a. ituriensis*
Subcaudals 117-138; normally upper labials 7, sometimes 6 or 8; range: western Uganda to western Kenya Colony...*a. elgonensis*

Taxonomically *batesii*, which ranges from Cameroon to the eastern Belgian Congo, appears to be nearly related to *a. elgonensis*, thus paralleling to some extent the situation in the allied genus *Thrasops* where the extreme westerly and easterly forms are more nearly related than the (?) derived forms occupying the Cameroon-Congo region.

The type number of *a. elgonensis* is M. C. Z. 18198, not 18189 as printed.

Variation. Midbody scale-rows 15; ventrals 156-158; anal divided; subcaudals 126-128; labials 7, the fourth and fifth entering the orbit.

Coloration. In life. ♂. Above, leaf green, each scale heavily edged with black, the black interstitial skin also conspicuous; upper labials pale green anteriorly and yellow posteriorly in their upper portion, blue below; five black lines on tail. Below, ventrals greenish flecked with white, a brown line along each lateral angle, outer ends of ventrals pale olive green; tail with a median dusky line flanked by irregular dark flecks.

THRASOPS JACKSONII JACKSONII Günther

Thrasops jacksonii Günther, 1895, Ann. Mag. Nat. Hist. (6), 15, p. 528: Kavirondo, Kenya Colony.

♀ (M. C. Z. 48341) Bundibugyo, U. 22.xii.38.

♂ ♀ (M. C. Z. 48342) Idjwi Id., B. C. 22.ii.39.

Native name. *Wahimbiri* (Lutoro and Luamba).

Synonymy. The snake from Mozambique described as *Thrasops j. mossambicus* by Mertens (1937b, Abh. Senckenberg. Naturf. Ges., No. 435, p. 13) is a *Dispholidus typus*, a correction with which Dr. Mertens concurs after reexamination of the dentition. Parker (1940a, p. 271), by describing *occidentalis*, has elucidated the confusion arising from western records of *jacksonii*. The following key, based on all records in the literature, and a detailed study of M. C. Z. material, deals with the recognizable forms in the genus.

1. Three labials in contact with the lowest postocular; midbody scale-rows 15-19; ventrals 175-187; subcaudals 120-140; range: French Guinea east to Togo.....*occidentalis*
Two, very rarely 3, labials in contact with the lowest postocular; range: Nigeria east to Kenya.....2
2. Midbody scale-rows 13-15; the dorsals much longer than the ventrals; range: Nigeria south to Cabinda and western Belgian Congo.....*flavicularis*
Midbody scale-rows 17-21, the dorsals not or but slightly longer than the ventrals; range: central Belgian Congo east to Kenya Colony.....3
3. Midbody scale-rows 19, rarely 17 or 21; ventrals 187-211; range: central Belgian Congo east to western Tanganyika Territory and western Kenya Colony.....*j. jacksoni*
Midbody scale-rows 17; ventrals 170-178; range: Mount Kenya to Nairobi in southcentral Kenya Colony.....*j. schmidti*

Variation. Midbody scale-rows 19; ventrals 187-206; anal divided; subcaudals 133-141; preoculars 1-2; postoculars 3. The young Idjwi male would actually fall to *occidentalis* in the above key for it has a third labial just reaching the lowest postocular.

Dict. A chameleon (*C. b. ellioti*) in the Bundibugyo snake; an agama (*A. atricollis*) in each of the reptiles from Upper Mulinga, Idjwi Island, Lake Kivu.

MEIZODON SEMIORNATA (Peters)

Coronella semiornata Peters, 1854, Monatsb. Akad. Wiss. Berlin, p. 622: Tete, Mozambique.

1 (M. C. Z. 48337) Kitaya, Ruvuma R., T. T. 29.iii.39.

3 (M. C. Z. 48338-40) Amboni Estate, T. T. 19.vi.39.

Native name. *Namedi* (Kimakonde).

Variation. Midbody scale-rows 21; ventrals 175-196; anal divided; subcaudals 83-85; labials 8, the fourth and fifth entering the orbit; 4-5 lower labials in contact with an anterior sublingual; preocular 1; postoculars 1-2; temporals 2 + 2, rarely 2 + 3 or 3 + 3 (M. C. Z. 48338).

Corrigenda. Having examined the type of *Coluber smithii* Boulenger from Somaliland, I must refer the Kenya snakes which I described as *Coronella semiornata fuscrosca* to the synonymy of *smithii*, entirely concurring with the remarks of Bogert (1940, p. 48) who independently reached the same conclusion, and whom I follow in recognizing *Meizodon* for the tropical African '*Coronella*', so different from the European genotype, *austriaca*.

Measurements. Largest ♂ (M. C. Z. 48338) measures 695+ (550 + 145+) mm., tail tip missing; only ♀ (M. C. Z. 48339) measures 682 (552 + 130) mm.

Dict. A gecko (*Hemidactylus gardineri*) in one Amboni snake.

Habitat. I caught all beneath rotting vegetation, the Kitaya snake at the base of a banana plant, the others in a sisal plantation as described under Amboni in the account of the itinerary.

MEIZODON CORONATA (Schlegel)

Calamaria coronata Schlegel, 1834, Phys. Serp., 2, p. 46: Gold Coast.

♂ (M. C. Z. 47829) Gulu, Acholi, U. ix-x.38. (C.R.S. Pitman).

Variation. Midbody scale-rows 19; ventrals 185; anal divided; subcaudals 66+; labials 8, the fourth and fifth entering orbit; preocular 1; postoculars 2; temporals 1 + 2.

In its labial-sublingual arrangement of 4-5 in contact, this individual combines the characters of both *coronata* and its synonym *regularis* and possesses the blackish belly of the latter. For discussion on this subject see Loveridge (1936j, p. 253).

Measurements. ♂ measures 597+ (482 + 115+) mm., tail tip missing.

GRAYIA SMYTHII (Leach)

Coluber Smythii Leach, 1818, in Tuckey, Explor. River Zaire, App., p. 409: Embomma, i.e. Boma, Belgian Congo.

♂ ♀ (M. C. Z. 47813-4) Mlanji, L. Victoria, U. 14-20.vii.38.
(C.R.S. Pitman).

Variation. Midbody scale-rows 17; ventrals 155-164; anal 2; subcaudals 92-99; labials 7-S, the fourth entering the orbit; temporals 2 + 2 and 2 + 3.

Measurements. ♂ measures 990 (675 + 315) mm.; the ♀ measures 1260 (900 + 360) mm.

DUBERRIA LUTRIX ABYSSINICA (Boulenger)

Homalosoma abyssinicum Boulenger, 1894, Cat. Snakes Brit. Mus., 2, p. 276, pl. xiii, fig. 2: Lake Ashangi, Ethiopia.

2 (M. C. Z. 48345) S. Kinangop, K. C. 27.x.38.

11 (M. C. Z. 48346-53) Nyakabande, U. 27-31.i.39.

1 (M. C. Z. 48354) Mushongero, U. 1.ii.39.

Native name. *Bulifu* (Lukiga).

Synonymy—a correction. In reporting on a collection of *D. l. shirana*, and with inadequate northern material, I (1933h, p. 241) assumed that the holotype of *abyssinica* without a loreal, and holotype of *atriventris* with a loreal, were simply aberrations of the highly variable *shirana*.

Uthmoller (1937, Temminckia, 2, p. 112), reporting on three specimens from the Kilimanjaro region, remarked that all three were likewise intermediate in character between *shirana* and *lutrix*.

Pitman (1936, p. 62) commented on Kigezi snakes being much nearer *abyssinica* than to *shirana* in the matter of colouration.

More recently, Bogert (1940, p. 40) revived the name *abyssinica* in a racial sense for an Ethiopian specimen, pointing out that its ventral and subcaudal counts were lower than that of females in my series of *shirana* from southern Tanganyika Territory.

After going through the entire *Duberria* literature, I find that I was in error in not recognizing *abyssinica*, to whose synonymy *atriventris* (Sternfeld) should be transferred as all attempts to separate them failed. The following key, based on counts of 53, 50 and 56 snakes respectively, though not all the characters have been available in every specimen, reflect the position as it stands at present. Slight changes in the percentages are due to the effect of additional data. I regard *D. l. abyssinica* of the Northern highlands as being the original stock giving rise to both *shirana* and *lutrix* between which it occupies an intermediate position.

1 postocular (100%); a loreal (absent in 10%); belly usually very dark; rarely yellowish in middle; range: highlands of western Belgian Congo northeast through Uganda, Ethiopia and south to the Usambara Mountains in northeastern Tanganyika Territory *l. abyssinica*
 1 postocular (85%, 2 in 15%); no loreal (100%); belly yellowish in middle, rarely dark; range: highlands of southern Tanganyika and Nyasaland around L. Nyasa *l. shirana*
 2 postoculars (87%, 1 in 13%); a loreal (absent in 7%); belly yellowish in middle; range: highlands and lowlands of Africa south of the Zambesi *l. lutrix*

The lepidosis of the three forms, based on all available records and scale-counts of the new material listed above, is as follows:

<i>D. l. abyssinica.</i>	Range of ventrals 118-149,	subcaudals 17-39.
<i>D. l. shirana</i>	“ 126-151,	“ 24-46.
<i>D. l. lutrix</i>	“ 120-134 ¹ ,	“ 25-51.

Omitted from *abyssinica* is Pitman's (1938b, p. 117) record of 151 ventrals and 46 subcaudals, as the latter is so much higher than any other Kigezi specimens and may be based on a native's count.

Measurements. Largest ♂ (M. C. Z. 48354) measures 332 (281 + 51) mm.; largest ♀ (M. C. Z. 48346) measures 369 (332 + 37) mm.

Pitman (1936, p. 62) is mistaken in thinking that Sternfeld's measurements refer to the Bukoba snake. Throughout his papers on the Fauna der deutschen Kolonien, Sternfeld furnishes condensed translations of Boulenger's descriptions, renders millimetres into centimetres, then adds such localities as Bukoba from which he has material. The 390 mm. snake, whose large size surprised Pitman, was a typical *lutrix lutrix* from South Africa.

¹144 *vide* Boulenger.

² 21 *vide* Boulenger.

Breeding. The following records of developing eggs were made.
Nyakabande:

January 27, 1939, a	♀	held	uncounted	eggs	with	large	embryos.
“	♀	“	11	eggs	measuring	14 x 7	mm.
“	♀	“	10	“	“	8 x 5	mm.
“	♀	“	7	“	“	12 x 9	mm.

Dict. Slugs were present in the stomachs of four Nyakabande snakes.

DUBERRIA LUTRIX SHIRANA (Boulenger)

Homalosoma shiranum Boulenger, 1894, Cat. Snakes Brit. Mus., 2, p. 276.
pl. xiii, fig. 1: Shire Highlands, Nyasaland.

7 (M. C. Z. 44114 & Vienna Mus.) Ugano, T. T. 1935-6. (H. Zerny).

Distribution. Ugano is in the Matengo highlands just east of Lake Nyasa at about 1400-1600 metres. As these snakes constitute the third known series of the race, their data is furnished below. All other references, other than mine (1933h, p. 241) and part of Bogert's (1940, p. 39) should be transferred to *abyssinica*, except of course those based on the type.

Variation. Midbody scale-rows 15; ventrals 132-148; anal entire; subcaudals 29-41; labials 6, the third and fourth (9 sides) or second, third and fourth (4 sides) entering orbit, or 7, the third, fourth and fifth entering (1 side); loreal absent; preocular 1; postocular 1; temporals 1 + 2.

Measurements. Largest, a ♀ (M. C. Z. 44114), measures 379 (326 + 53) mm.

PROSYMNA AMBIGUA STUHLMANNI (Pfeffer)

Liginirostra stuhlmanni Pfeffer, 1893, Jahrb. Hamburg. Wiss. Anst., 10, p. 78,
pl. i, figs. 8-10: Usambara, Tanganyika Territory.

♂ ♂ (M. C. Z. 48355-6) Amboni Estate, T. T. 19.vi.39.

Variation. Midbody scale-rows 15; ventrals 127-129; anal entire; subcaudals 29-28; labials 6, the third and fourth entering the orbit; preocular 1; postoculars 2; temporals 1 + 2.

Coloration. One is white beneath, the other black.

Measurements. Both ♂♂ measuring the same, viz. 189 (161 + 28) mm.

Habitat. Ploughed up by tractor in sisal plantation.

DASYPELTIS SCABER MEDICI (Bianconi)

Dipsas medici Bianconi, 1859, Mem. Accad. Sci. Bologna, **10**, p. 501, pl. xxvi: Mozambique.

Dasyveltis scaber var. *fasciolata* Peters, 1868, Monatsb. Akad. Wiss. Berlin, p. 451: Zanzibar.

Dasyveltis lineolatus Peters, 1878, Monatsb. Akad. Wiss. Berlin, p. 206: Kitui, Ukamba, Kenya Colony.

Dasyveltis elongata Mocquard, 1888, Mem. Cent. Soc. Philom. Paris, p. 131, pl. xii, fig. 2: Zanzibar.

Dasyveltis scabra var. *bianconii* Med. (*sic*) Boettger, 1893, Zool. Anz., p. 387: (*lapsus* for var. *medici* Bianconi).

♀ (M. C. Z. 48384) Mikindani, T. T. 21.iv.39.

♂. 4 ♀ (M. C. Z. 48385-9) Nchingidi, T. T. 18.v.39.

Native name. *Kwararu* (Kisambara).

Variation. Midbody scale-rows 23-25; ventrals 242-249; anal entire; subcaudals 73-86; preoculars 1-2; postoculars 2.

Measurements. ♀ (M. C. Z. 48384) measures 750 (625 + 125) mm.

Breeding. At Mikindani, April 21, above ♀ held 6 eggs measuring 24 x 8 mm. All the Nchingidi specimens were young, four were under 268 mm. in total length and appeared to be from the same litter, two being taken in my tent and two under a nearby log at the forest-edge.

Remarks. Some remarks appear called for by my action in reviving the name *medici*. I had already been puzzled by, and commented upon, the high ventral and subcaudal counts of certain East African '*scaber*,' but the position was masked in part by non-separation of the sexes, and further confused by the occurrence in West Africa of snakes with a similarly high range of scale-counts, though those occupying the centre of the continent have the low counts usually associated with typical *scaber*. A somewhat analogous position occurs with the forms of the genus *Thrasops* in the sense that the eastern and western forms are more closely related than those now occupying the central part of the range.

Bogert (1940, p. 86) has recently clarified the position regarding the status of the western virgin-forest form *macrops*, now made a synonym of *fasciatus*, by advancing sound reasons for treating it as a race of *scaber*. Its not altogether unexpected discovery in western Uganda has caused me to attempt an elucidation of the status of the various races occurring in East Africa. I had been long aware that in

the montane forests of this region only a uniformly black, brown, or pinkish brown form (*palmarum*) occurred, which form I now find occupies the highland plateau of the Central Lake region also. In general throughout this region the rhomboid form appears to be found along rivers and in the steppe and savanna. Whether it can be recognized as an ecological form separable from *palmarum* only by colour — for the squamation is the same — remains to be seen.

D. s. medici is an eastern coastal-belt, or coastal-plain, race associated with red laterite soils which are characteristic of this region. It ascends up to 3,000 feet (Amani, Usambara mountains, and Nchin-gidi, Rondo Plateau) where the red soils are to be found. The form itself, is reddish, uniform, or more usually cross-striped with narrow black striae.

At some not too distant date I hope to study the entire literature of *Dasypletis*, but in the meantime offer the following tentative key based on nearly a hundred specimens in the collection of the Museum of Comparative Zoölogy. It is not to be expected that every individual reptile will confine its movements to its allocated sphere; in general, however, the arrangement appears to reflect the position very closely, and such apparent contradictions as have been investigated proved to have erroneous data or to be incorrectly sexed. I regard the South African *inornatus* (inc. *unicolor*) as a recognizable south-eastern race distinguished from *scaber scaber* by its high subcaudal count and colour, the latter leading to its confusion with *palmarum*.

Ecological Races of DASYPALTIS occurring in East and Central Africa

1. Subcaudals of males more than 77 (78-94), of females more than 62 (63-87) 2.
 Subcaudals of males less than 75 (51-74), of females less than 66 (44-65) 3.
2. Above pinkish brown, uniform in northeast, usually with numerous, narrow, dark, sometimes light-edged, crossbands, \cap -shaped anteriorly, posteriorly transverse and coalescing on dorsum with a more or less distinct vertebral band (On reddish laterite soil of coastal plain up to 3,000 feet, from Somaliland to Mozambique) *s. medici*
- Above yellowish olive to pinkish brown, with numerous, broad, dark, vertical, stripes on flanks which may alternate, or coalesce, with blotches on dorsum (Virgin forests of West Africa from Sierra Leone to extreme western border of Uganda) . . . *s. fasciatus*

3. Above pinkish brown, dark brown, or black, uniform, except near range of *fasciatus* when there may be some transverse dark lines anteriorly (Highlands of Central African Lake Region, in East in montane forests of Elgon, Kenya and Kilimanjaro, possibly Ethiopian form distinct; trans.Africa in equatorial region)

s. palmarum

Above pale sandy or olive brown, with numerous, dark, stripes or blotches on flanks alternating with a dorsal series of large rhomboidal or squarish spots which sometimes coalesce to form a zigzag vertebral band (Savanna areas and river banks in Uganda, Kenya and Tanganyika; ranging from Sudan to Cape) *s. scaber*

DASYPELTIS SCABER FASCIATUS Smith

Dasyveltis fasciatus A. Smith, 1842, Illus. Zool. S. Africa, **3**, footnote to pl. lxxiii: Sierra Leone.

Dipsas carinatus Hallowell, 1845, Proc. Acad. Nat. Sci. Philadelphia, p. 119: Africa, later given as Liberia.

Rachiodon scaber var. *subfasciatus* Jan (*nomen nudum*), 1863, Elenco Sist. Degli Ofidi, p. 106: Gold Coast.

Dasyveltis macrops Boulenger, 1907, Ann. Mag. Nat. Hist. (7), **19**, p. 324: Efulen, French Cameroon.

4 ♀ ♀ (M. C. Z. 48357-8) Bundibugyo, U. 21.xii.38.

Distribution. Bundibugyo lies northwest of the Ruwenzori Mountains, *i.e.* is in the Ituri Forest region and probably is the only area of Uganda where this western forest form (of which *macrops* is a syn.) occurs. These specimens constitute the first Uganda records.

Native name. *Bankvi* (Luamba).

Variation. Midbody scale-rows 21-25; ventrals 239-248; anal entire; subcaudals 63-69; preoculars 1-2; postoculars 2.

This form is sharply distinguished from *palmarum* and *scaber* by its higher ventral and subcaudal count, but I cannot find the larger eye a character constant enough to be of value. It will be recalled that *breviceps* Peters from southeast Africa was separated from *scaber* on the same basis. Large eyed individuals, or groups of such, appear to crop up throughout the range of this widespread species.

Measurements. Largest ♀ (M. C. Z. 48358) measures 862 (730 + 132) mm.

Breeding. One ♀ held small ova, another 9 eggs measuring 16 x 6 mm., a third 5 eggs, each measuring about 43 x 10 mm.

DASYPELTIS SCABER PALMARUM (Leach)

Coluber Palmarum Leach, 1818, in Tuckey, Explor. River Zaire, App. p. 408: Einbomma, i.e. Boma, Belgian Congo.

?*Rachiodon Abyssinus* Duméril & Bibron, 1854, Erpét. Gén., 7, p. 496: Ethiopia.

Rachiodon scaber var. *unicolor* Jan, part (*nomen nudum*), 1863, Elenco Sist. Degli Ofidi, p. 106: Gold Coast.

Dasyveltis scabra var. *atra* Sternfeld, 1912, Wiss. Ergeb. Deut. Zentral-Afrika-Exped. 1907-1908, 4, p. 272: Virgin forest behind boundary mountains northwest shore of Lake Tanganyika, Belgian Congo.

♀ (M. C. Z. 48359) Mihunga, U. 29.xii.38.

♂, 3 ♀ ♀ (M. C. Z. 48360-1) Nyakabande, U. 28.i.39.

♂ ♀ (M. C. Z. 48362-3) Mushongero, U. 1.ii.39.

♀ (M. C. Z. 48364) Kisenyi, B. R. 10.ii.39.

16 ♂ ♂, 9 ♀ ♀ (M. C. Z. 48365-83) Idjwi Id., B. C. ii.39.

Native names. *Utugu* (Lulega, for black examples), *kubajoka* (Lulega, pinkish brown specimens).

Variation. Midbody scale-rows 21-25; ventrals 203-236; anal entire; subcaudals 51-73; preoculars 1-2; postoculars 1-2.

Coloration. Both uniformly black, brown, and pinkish red forms occur at upper Mulinga on Idjwi Island, Lake Kivu. Two ♂ ♂ (M. C. Z. 48374-5) tend towards the colouring of *fasciata* and it was interesting to note that these two snakes were the only ones with a subcaudal count above 69. The coloration in life of one unusual ♂ was noted as follows:

Above, dull copper, red, inverted, chevron-shaped markings on occiput, a chain of spots along vertebral line corresponding to a series of vertical stripes on flanks; flanks light coppery hue. Below, chin and throat white, rest of undersurface uniformly pink.

Measurements. Largest ♂ (M. C. Z. 48374) measures 623 (513 + 110) mm., largest ♀ (M. C. Z. 48360) measures 775 (677 + 98) mm.

Breeding. Not one was gravid.

Enemies. Three egg-eaters were recovered from the stomachs of cobras (*Naja melanoleuca*) on Idjwi Island.

DASYPELTIS SCABER SCABER (Linnaeus)

Coluber scaber Linnaeus, 1758, Syst. Nat., ed. 10, 1, p. 223: Indiis.

Anodon typus A. Smith, 1829, Zool. Journ., 4, p. 443: Near Cape Town, Cape Province, Union of South Africa.

Dasypeltis scaber var. *capensis* Peters, 1864, Monatsb. Akad. Wiss. Berlin, p. 644, footnote: Cape of Good Hope.

Dasypeltis scaber var. *mossambicus* Peters, 1864, Monatsb. Akad. Wiss. Berlin, p. 644, footnote: Boror and Tete, Mozambique.

Dasypeltis scaber var. *breviceps* Peters, 1864, Monatsb. Akad. Wiss. Berlin, p. 645, footnote: Kaffirland.

♂ (M. C. Z. 47815) Busingiro, U. vii.38. (C.R.S.Pitman).

Variation. Midbody scale-rows 27; ventrals 196; anal entire; subcaudals 54; preocular 1; postoculars 2.

GEODIPSAS VAUEROCEGAE Tornier

Geodipsas vauerocegae Tornier, 1902, Zool. Anz., 25, p. 703: Usambara Mountains, Tanganyika Territory.

♂ ♀ (M. C. Z. 48390-1) Magrotto Mtn., T. T. 8.vii.39.

Affinities. Bogert's (1940, p. 38) action in placing *Geodipsas* in juxtaposition to the aglyphous *Neusterophis* appears thoroughly sound. In external appearance, in the forest, I have often had a certain amount of difficulty in distinguishing *vauerocegae* from *N. olivaceus uluguruensis*. Until the relationships of all the aglyphous and opisthoglyphous genera of colubrines have been settled, however, I prefer to adhere to the older grouping for convenience of reference.

Variation. Midbody scale-rows 17; ventrals 128-131; anal entire; subcaudals 38 pairs in ♂, tail of ♀ lacks tip; labials 7, the third and fourth entering the orbit; preoculars 1; postoculars 2; temporals 1 + 2.

Measurements. The ♂, a juvenile evidently just born or hatched, measures only 125 (105 + 20) mm.

Habitat and defense. The adult was found among drift leaves between the buttress roots of a giant tree in the dark forest. Her eyes were opaque as if about to slough. On being picked up she emitted cloacal secretions which smelt just like those of *Natrix n. natrix*. The young male was in leaf mould beneath a nearby log. As I took it up by the middle it flattened out to the thinness of stout paper and held itself thus distended and rigidly immobile.

BOIGA BLANDINGII (Hallowell)

Dipsas Blandingii Hallowell, 1844, Proc. Acad. Nat. Sci. Philadelphia, p. 170: Liberia.

♀ (M. C. Z. 47812) Kome Id., Lake Victoria, U. 24.vi.38.
(C.R.S.Pitman).

Distribution. Kome Island, near Entebbe, at the north end of the lake, should not be confused with the island of the same name near Mwanza, at the south end. The precise locality where the snake was killed is Kibanga, on Kome.

Variation. Midbody scale-rows 23; ventrals 255; anal entire; subcaudals 123; labials 9, the fourth, fifth and sixth entering the orbit; preoculars 1-2; postoculars 2; temporals 2 + 2.

Measurements. ♀ measures 1880 (1440 + 440) mm.

BOIGA PULVERULENTA (Fischer)

Dipsas pulverulenta Fischer, 1856, Abhand. Natur. Ver. Hamburg, 3, p. 81, pl. iii, figs. 1a-1c: Edina, Grand Bassa County, Liberia.

♀ (M. C. Z. 48392) Bundibugyo, U. 24.xii.38.

Distribution. The only other Uganda record for this species is that of Pitman (1938, p. 134) who took one in 1933 in the Mabira Forest.

Variation. Midbody scale-rows 19; ventrals 256; anal entire; subcaudals 118; labials 8, the third, fourth and fifth entering the orbit; preocular 1; postocular 2; temporals 2 + 2.

Measurements. ♀ measures 912 (720 + 192) mm.

DIPSADOBOA UNICOLOR Günther

Dipsadoboa unicolor Günther, 1858, Cat. Snakes Brit. Mus., p. 183: West Africa.

♂ (M. C. Z. 48394) Mabira Forest, U. 8.xi.38.

♂ (M. C. Z. 48395) Mihunga Swamp, U. 17.i.39.

Distribution. These snakes constitute the first records of this western forest form in Uganda.

Variation. Midbody scale-rows 17; ventrals 190-197; anal entire; subcaudals 57-66, single; labials 8-9, the fourth and fifth, or fourth-fifth and sixth entering the orbit; preocular 1; postoculars 2; temporals 1 + 2.

Coloration. In life. Above, bright olive green shading to plumbeous on tail. Below bright yellow on throat and ventrals, black beneath tail (♂ adult).

Above, soft olive green, becoming rather abruptly plumbeous on tail. Below, hinder part of throat white, ten anterior ventrals tinged with yellow, rest of under surface, including outer scale-row, uniformly blue. Vertical pupil is black, the iris a gray-greenish white. (♂ juvenile, its three umbilical ventrals still showing suture).

Measurements. Adult ♂ (M. C. Z. 48394) measures S53 (700 + 153) mm., the juvenile ♂ only 356 (303 + 53) mm.

Diet. A frog (*Phrynobatrachus graueri*) in stomach of juvenile.

Habitat. The young snake was taken on a tangle of vines growing on a wild banana in the swamp below Mihunga ridge, it did not make use of its tail when placed upon a twig.

CROTAPHOPELTIS HOTAMBOEIA HOTAMBOEIA (Laurenti)

Plate 3, fig. 1.

Coronella hotamboeia Laurenti, 1768, Syn. Rept., p. 85: "India orientali," *i.e.* Africa.

- 1 (M. C. Z. 47802) Lira, Lango, U. iv-viii.38 (C.R.S.Pitman).
- 1 (M. C. Z. 47811) Busiro, Kome Id., U. 17.vi.38 (C.R.S.Pitman).
- 1 (M. C. Z. 47816) Busingiro, Budongo F., U. vi.38 (C.R.S.Pitman).
- 1 (M. C. Z. 47831) Gulu, Acholi, U. iv-viii.38 (C.R.S.Pitman).
- 1 (M. C. Z. 48395) Butiaba, L. Albert, U. 5.xii.38.
- 3 (M. C. Z. 48396-7) Ujiji, L. Tanganyika, T. T. 13.iii.39.
- 5 (M. C. Z. 48398-401) Kitaya, Ruvuma River, T. T. 28.iii.39.
- 1 (M. C. Z. 48402) Mikindani, s.e. coast, T. T. 18.iv.39.
- 3 (M. C. Z. 48403-5) Mbanja, near Lindi, T. T. 27.iv.39.
- 1 (M. C. Z. 48406) Lake Rutamba, near Lindi, T. T. 8.v.39.
- 6 (M. C. Z. 48407-9) Nchingidi, Rondo Plateau, T. T. 18.v.39.
- 1 (M. C. Z. 48410) Siga Caves, near Tanga, T. T. 15.vi.39.
- 2 (M. C. Z. 48411-2) Amboni Estate, Tanga, T. T. 19.vi.39.
- 7 (M. C. Z. 44115 & Vienna Mus.) Ugano, T. T. 1935-6 (H. Zerny).

Native names. *Chijamitela* (Kimwera); *nowlendi* (Kimakonde at Kitaya, but thought by both Konde and Yao at Kitaya to be the young of *Psammophis s. sibilans*).

Variation. Midbody scale-rows 19; ventrals 147-178; anal entire; subcaudals 33-48; labials 7-9, the third and fourth, or third, fourth and fifth, or fourth and fifth, or fourth, fifth and sixth entering the orbit; preocular 1, or 2 in three snakes; postoculars 2, or 1 on one

side of one snake; temporals 1 + 1 or 1 + 2; loreal noticeably longer than high in the Butiaba and one Ujiji snakes which, however, are not like *degeni* in any other respect.

Measurements. Largest ♂ (M. C. Z. 48412) measures 608 (513 + 95) mm., largest ♀ (M. C. Z. 47831) measures 533 (460 + 73) mm.

Sexual dimorphism. Though in each locality, when taken separately, males have a higher subcaudal count, in the series as a whole no such separation is possible, despite a careful rechecking of the sexual diagnosis. Ventrals in ♂♂ are 150-172, in ♀♀ 147-178; subcaudals in ♂♂ are 35-48, in ♀♀ 33-45.

Breeding. At Kitaya, March 28, one ♀ held very small ova; on March 31, 5 eggs measuring 22 x 12 mm., thought to be those of this species, were found beneath a heap of vegetable rubbish. At Siga Caves, June 15, a ♀ held 6 eggs measuring 27 x 11 mm.

Diets. Stomach contents at Ujiji consisted of a gecko (*H. mabouia*) and frog (*Hyperolius argentovittis*) in one snake, a toad (*B. r. regularis*) in another; at Kitaya, a green shield-bug of a species which emits a pungent odour; at Ugano, Mbanja and Nchingidi, four frogs (*Arthroleptis s. stenodactylus* and *s. lönnbergi*) in three snakes.

TRIMERORHINUS TRITAENIATUS MULTISQUAMIS Loveridge

Trimerorhinus tritaeniatus multisquamis Loveridge, 1932, Proc. Biol. Soc. Washington, **45**, p. 84: Nairobi, Kenya Colony.

♂ ♀ ♀ (M. C. Z. 48413-5) S. Kinangop Plateau, K. C. 27.x.38.

Taxonomy. As pointed out by Mertens (1937c, Copeia, p. 70), the laudable attempt by Stejneger (1936b, Copeia, p. 139) to avoid complications regarding the genus *Cerastes* by designating a synonym as genotype, was rendered nugatory by the prior action of Fejervary (1923, Zool. Anz., p. 172) in designating *rhombceatus*. *Trimerorhinus* therefore becomes a synonym of *Cerastes* but the employment of a name, so long associated with the horned desert vipers of North Africa, which occurs so frequently both in medical and popular literature appears to me to call for action by the International Committee on Nomenclature on the grounds that 'no name shall be employed if the result will be greater confusion than uniformity' (*cf.* Crossland, 1939, Nature, p. 942).

Variation. Midbody scale-rows 17; ventrals 163-166; anal divided; subcaudals 50-55; labials 8, the fourth and fifth entering the orbit; preoculars 1; postoculars 2; temporals 2 + 3.

Breeding. Both ♀ ♀ held eggs, apparently 7, measuring 16 x 5 mm. That such small snakes should be breeding appears to indicate that the form is dwarfed in the alpine zone at 10,000 feet, where the uncongenial climatic conditions restrict the hours of feeding and basking.

Measurements. The ♂ (M. C. Z. 48413) measures 490 (405 + 85) mm., the larger ♀ (M. C. Z. 48414) measures 516 (426 + 90) mm.

RHAMPHIOPHIS RUBROPUNCTATUS (Fischer)

Dipsina rubropunctatus Fischer, 1884, Jahrb. Hamburg. Wiss. Anst., 1, p. 7, pl. i, fig. 3: Near Arusha, Tanganyika Territory.

♂ ♂ (M. C. Z. 48416-7) Amboni Estate, nr. Tanga, T. T. 20.iv.39.

Variation. Midbody scale-rows 19; ventrals 220; anal divided; subcaudals 140 & M; labials 8, the fourth and fifth entering the orbit; preoculars 2; postoculars 2; temporals 2 + 3 and 2 + 5.

Measurements. Larger ♂ measures 1492 (1000 + 492) mm., the other, though 15 mm. longer in body, lacks the tip of its tail.

Habitat. Disturbed by a tractor distributing piles of rotting vegetation in a cleared sisal plantation.

RHAMPHIOPHIS OXYRHYNCHUS ROSTRATUS Peters

Rhamphiophis rostratus Peters, 1854, Monatsb. Akad. Wiss. Berlin, p. 624: Tete; Mesuril and Quitangonha, Mozambique.

1 (M. C. Z. 48418) Mikindani, T. T. 21.iv.39.

1 (M. C. Z. 48419) Mbanja, Lindi, T. T. 4.v.39.

1 (M. C. Z. 48420) Siga Caves, T. T. 15.vi.39.

Native name. *Ninhyongolihanga* (Kimakonde at Mbanja).

Taxonomy. In view of Pitman's finding both the western *oxyrhynchus* and the eastern *rostratus* in Uganda, a subspecific recognition of their close relationship appears advisable.

Variation. Midbody scale-rows 17; ventrals 164-176; anal divided; subcaudals 99 & M; labials 8-9, the fifth entering the orbit; preoculars 2-3; postoculars 2-3; temporals 2 + 3 and 3 + 4.

Measurements. Size of all three moderate, the two larger snakes lack tips to their tails.

Diet. Foot of a small mammal in Mbanja snake.

Habitat. I captured the Siga snake beneath the debris of a collapsed hut at the edge of a large crocodile-inhabited swamp; the Mbanja reptile was taken on the landing field.

DROMOPHIS LINEATUS (Duméril & Bibron)

Dryophylax lineatus Duméril & Bibron, 1854, *Erpét. Gén.*, **7**, p. 1124: White Nile, Africa.

1 (M. C. Z. 47806) Lira, Lango, U. iv-viii.38 (C.R.S.Pitman).

2 (M. C. Z. 47832) Gulu, Acholi, U. iv-viii.38 (C.R.S.Pitman).

Variation. Midbody scale-rows 17; ventrals 145-152; anal divided; subcaudals 91 & M; labials 8, the fourth and fifth entering the orbit; preocular 1; postoculars 2; temporals 1 + 2.

The data from these specimens were utilized in the recently published (1940c, *Bull. Mus. Comp. Zoöl.*, **87**, pp. 1-69) revision of this genus.

PSAMMOPHIS SIBILANS SIBILANS (Linnaeus)

Coluber sibilans Linnaeus (part), 1758, *Syst. Nat.*, ed. 10, **1**, p. 222: "Asia."

1 (M. C. Z. 47857) Butiaba, U. 29.xi.38.

5 (M. C. Z. 47858-62) Bundibugyo, U. 21.xii.38.

2 (M. C. Z. 47863-4) Kitaya, T. T. 25.iii.39.

3 (M. C. Z. 47865-7) Mikindani, T. T. 11.iv.39.

1 (M. C. Z. 47868) Nchingidi, T. T. 25.v.39.

Distribution. Also seen at Ujiji, Mbanja, and Amboni Estate, Tanganyika; and eight donated by Captain Pitman from Lira, Lango; Serere, Teso; and Gulu, Acholi, Uganda.

Native names. *Sebusaru* (Lutoro); *nachungu* (Kimakonde and Kiyao).

Coloration. Usually Uganda snakes have well-developed lateral stripes on their dusky gray bellies as is commonly the case with specimens from the Central Lake Region. See revision (Loveridge, 1940c, p. 38) for further comments.

Breeding.

Butiaba, November 29, ♀ held ? eggs measuring 17 x 11 mm.

Bundibugyo, December 21, ♀ " 9 " " 15 x 9 mm.

Diet, etc. At Mbanja I was sitting on a low veranda, my feet upon the ground, when there was a rushing sound in the foot-high grass beside me, and a skink (*Mabuya v. varia*) dashed out and into another patch on my left. As my eyes swung back from following its flight I was aware of, rather than saw, the arrival of a four-foot hissing sand snake which halted the pursuit, its head poised nine inches from the ground, within a foot of me. Before I could take action, it turned, and, like a flash, disappeared into the grass from which it had emerged: I searched for it immediately but in vain.

At Nchingidi I passed close by a large (1336 mm.) snake as it lay basking beside a narrow path. Returning, I picked it up by the back of the neck without it offering any serious resistance: no stick was employed. The reptile was, in fact, almost moribund, yet I found no nematodes in its stomach—only the tail of a Sundevall's skink *Riopa sundevallii* and a little fur of some mammal (? Crocidura); nor had it suffered any injury.

Parasites. Numerous nematodes (*Ophidascaris* sp. probably *O. mombasica*) in the Butiaba snake.

Enemies. A large sand-snake, as well as two *P. s. sudanensis*, recovered from the stomach of an eagle (*Circaetus cinereus*) at Amboni, near Tanga.

PSAMMOPHIS SUBTAENIATUS SUDANENSIS Werner

Psammophis subtaeniatus var. *sudanensis* Werner, 1940, Denks. Akad. Wiss. Wien, **96**, p. 504: Kadugali, Anglo-Egyptian Sudan.

1 (M. C. Z. 47869) Kitaya, Ruvuma R., T. T. 3.iv.39.

7 (M. C. Z. 47870-6) Mikindani, T. T. 10-11.iv.39.

1 (M. C. Z. 47877) Nchingidi, T. T. 13.iv.39.

2 (M. C. Z. 47878-9) Amboni Estate, T. T. 20.vi.39.

Distribution. Also occurs at Mbanja, near Lindi, southeastern T. T.

Native name. *Naru* (Kimakonde and Kimwera).

Variation. Embodied in the recently published revision of the genus *Psammophis* (1940c, Bull. Mus. Comp. Zool., **87**, pp. 1-69).

Diet. A frog (*Arthroleptis s. stenodactylus*) in each of two Mikindani snakes.

Enemies. Three adults recovered from the stomach of one eagle (*Circaetus cinereus*) shot at Mikindani, and two from another eagle of the same species killed on Amboni Estate, near Tanga.

THELOTORNIS KIRTLANDII KIRTLANDII (Hallowell)

Leptophis Kirtlandii Hallowell, 1844, Proc. Acad. Nat. Sci. Philadelphia, p. 62: Liberia.

♂ (M. C. Z. 48421) Bundibugyo, U. 21.xii.38.

Native name. *Mbeya* (Luamba).

Remarks. Boulenger (1896d, p. 186) separated his material into two groups on the basis of certain colour characters. Boettger in 1913, and Mertens in 1937, rightly treated the southeastern form as a variety or race under the name of *T. k. capensis* Smith. More recently Bogert

(1940, p. 70) raised the latter to specific rank. This disposition, however, cannot be accepted in view of the intermediate nature of most East African specimens which renders their allocation to one race or the other almost arbitrary.

If, after examination of a topotype Liberian *kirtlandii* and topotype Natal *capensis*, one applies the differential characters cited by Bogert to a series of eleven snakes from Amani, Usambara Mountains, one finds that all have immaculate crowns but only three, of which two are young, have almost immaculate labials. Half the series have the rostral strongly recurved (though not so strongly as in Liberia), the rest agree with *capensis*. Half the series possess nasals which show well from above, the rest are indistinguishable from *capensis*. Only four of them have less than 161 ventrals, viz. 158, 158, 159 and 160. The same variability holds good for material from the Unguru Mountains, all of which I refer to *kirtlandii* on the basis of the immaculate upper surface of the head. On the other hand material from the savanna areas and southern Tanganyika Territory are definitely much nearer to *capensis*.

After examination of the 150 titles in the literature and tabulating the available data for ventral and subcaudal counts of 93 snakes, I have eliminated the few which are so extreme as to appear erroneous and made appropriate allocation of the remainder to their geographical form. The resultant ranges overlap so heavily that I reject them for diagnostic regions; the numbers in parenthesis give the extent of variation.

T. k. kirtlandii has ventrals 155-189 (35); subcaudals 137-175 (39).

T. k. capensis " " 147-170 (24); " 130-166 (37).

After omitting also the hemipeneal character advanced by Bogert, I cannot improve on his diagnostic characters but amend the range. The two forms may be separated as follows, though IT SHOULD BE BORNE IN MIND THAT TANGANYIKA AND ANGOLA ARE AREAS OF INTERMEDIATES.

Rostral and anterior ends of nasals broadly visible from above; crown of head immaculate, labials more or less immaculate, neck cross-banded. Inhabits forested areas of tropical Africa from Liberia to northern Angola, east to southern Somaliland and¹ central Tanganyika Territory..... *k. kirtlandii*

Rostral and anterior ends of nasals narrowly visible from above; crown of head speckled with black, labials heavily speckled with black,

¹ An occasional lowland specimen in the Voi region, southeast Kenya may preponderate in *capensis* attributes.

neck not cross-banded though black lateral blotches usually present; range: savanna areas of semitropical Africa from central Angola and central Tanganyika Territory south to Natal. *k. capensis*

Diet. An arboreal lizard (*Agama atricollis*) in its stomach, a ♀ snake from Buta, Bas Uele, Belgian Congo, had swallowed a skink (*Mabuya m. maculilabris*) and then two large nestling weavers (*Spermophaga r. ruficapilla*) which Dr. J. P. Chapin kindly identified for me.

THELOTORNIS KIRTLANDII CAPENSIS Smith

Thelotornis capensis A. Smith, 1849, Illus. Zool. S. Africa, 3, App., p. 19: Kaffirland and the country towards Port Natal.

♂ ♀ (M. C. Z. 48422-3) Kitaya, T. T. 28.iii.39.

♀ (M. C. Z. 48424) Mikindani, T. T. 13.iv.39.

♂ ♀ (M. C. Z. 48425-6) Nchingidi, T. T. 18.v.39.

Distribution. For distribution of this form, see remarks above.

Native names. *Lukukuti* (Kiyao); *lukukutu* (Kimakonde); *likukutu* (Kimawiha). These small variations were carefully checked and discussed with the elders of these tribes.

Variation. Midbody scale-rows 19; ventrals 154-159; anal divided; subcaudals 137-163; labials 8, the fourth and fifth, or third, fourth and fifth, entering the orbit; preocular 1; postoculars 3; loreals 2.

Measurements. The largest, a ♂ (M. C. Z. 48425), measures 1453 (875 + 578) mm.

Diet. Feathers of a finch or weaver in a Kitaya snake, toads (*Breviiceps mossambicus*) in both Nchingidi specimens, the smaller having eaten a very young toad. The presence of burrowing toads in an arboreal snake bears out the observation that the bird snake frequently descends to the ground.

DISPHOLIDUS TYPUS (Smith)

Bucephalus typus A. Smith, 1829, Zool. Journ., 4, p. 441: Old Latakoo, South Africa.

♂ juv. (M. C. Z. 48427) Mabira Forest, U. 12.xi.38.

Native name. *Kalwekalwe* (Luganda).

Variation. Midbody scale-rows 19; ventrals 188; anal divided; subcaudals 108; labials 7, third and fourth entering the orbit.

Habitat. This pinkish brown juvenile was entwined among some coffee berries on a tree growing at the forest edge, Mubango.

CALAMELAPS UNICOLOR WARRENI Boulenger

Calamelaps warreni Boulenger, 1908b, Ann. Natal Mus., 1, pp. 230, 234, fig. 3:
Kosi Bay, Zululand.

Calamelaps mellandi Boulenger, 1915a, Proc. Zool. Soc. London, p. 214:
Chirini Island, Lake Bangweulu, Northern Rhodesia.

♀ (M. C. Z. 48428) Mbanja nr. Lindi, T. T. 5.v.39.

♀ (M. C. Z. 48429) Nchingidi, Rondo, T. T. 18.v.39.

♀ (M. C. Z. 48430) Amboni Estate, T. T. 21.vi.39.

Native name. *Mbitu* (Kimakonde at Mbanja, but applied to amphisbaenids also).

Variation. Midbody scale-rows 19; ventrals 193-203; anal divided; subcaudals 17-19; labials 6, the third and fourth entering the orbit.

Remarks. Misled by the confusing records of Tanganyika Territory—where three races occur—I (1933h, p. 260) united several forms under the oldest name, *unicolor* (Reinhardt). Like *Thelotornis k. kirtlandii*, however, the western *unicolor* occurs on the forested or recently deforested, areas (Teita; Usambara and Uluguru Mtns.) in the east, but also on the coast (early German records of Paccetoni, Mombasa and Bagamoyo, which should be reexamined). Otherwise the East Coast form is *warreni*, while the Angolan race *polylepis* just penetrates the southwestern corner of Tanganyika Territory with the single example from Tukuyu (Langenburg) recorded by Tornier (1901a, Zool. Jahrb. Syst., 14, p. 86).

After elimination of *Calamelaps pellegrini* Angel, 1921—which I regard as a synonym of *Rhinocalamus ventrimaculatus* Roux, 1907—I have revised the genus, utilizing all records and the *concolor* and *unicolor* material in the Museum of Comparative Zoölogy. The following key is offered as a result.

Key to the Species

1. Frontal as long as, or shorter than, its distance from the rostral; temporals 1 + 1; upper labials 7; fifth lower labial largest; posterior sublinguals as long as, or almost as long as, the anterior; ventrals 133-148; range: Natal *concolor* (inc. *mironi*)
- Frontal as long as, or longer than, its distance from the end of the snout; temporal 1 only; upper labials 6 or 5; fourth lower labial largest; posterior sublinguals often scarcely differentiated, if distinct then much shorter than the anterior; ventrals 161-194; unknown in Natal 2.

2. Midbody scales in 21 rows; range: Angola and Transvaal north to extreme southwestern Tanganyika Territory (at Tukuyu nr. Lake Nyasa) *u. polylepis* (inc. *miolepis*)
Midbody scales in 19 to 15 rows 3.
3. Midbody scales in 19 rows; range: Southern Rhodesia (at Empandeni, where it meets with *polylepis*) and Zululand, north to Kenya Colony (at Ngatana, Tana River)
u. warreni (inc. *mellandi*)
Midbody scales in 17 to 15 rows 4.
4. Midbody scales in 17 rows; range: Tanganyika Territory (Uluguru Mtns.) north to Kenya Colony (at Peccatoni, *vide* Boettger) west to Sierra Leone and "Guinea"
u. unicolor (inc. *hildebrandtii* and *niangarae*)
Midbody scales in 15 rows; range Portuguese Guinea (Rio Cassine, known only from the type) *u. feae*

Sexual dimorphism. The marked dimorphism in the number of subcaudals in the races of *unicolor* is best shown in tabular form. It is important to note, however, that *the sexes have had to be assumed in the case of polylepis* as authors have not furnished the sex, moreover, though Boulenger stated that the type of *feae* was a ♂, from the scale-counts it would appear to be ♀.

♂ ♂. ♀ ♀. ♂ ♂ ♀ ♀.

<i>C. u. polylepis</i>	163-194, 200-212	ventrals;	27-27, 16-20	subcaudals.
<i>C. u. warreni</i>	161-177, 179-203	ventrals;	26-30, 17-21	subcaudals.
<i>C. u. unicolor</i>	164-182, 201-208	ventrals;	28-38, 21-27	subcaudals.
<i>C. u. feae</i>	196.	ventrals;	23	subcaudals.

Habitat. The Mbanja snake was dug up and brought in alive, the very fat Nchingidi female was wandering on a path near camp shortly after daybreak, the Amboni specimen was ploughed up by tractor.

MIODON and its forms

Since the turn of the century, the most valuable contribution to an understanding of this genus is that contributed by Bogert (1940, p. 45) who has painstakingly investigated the vexed question of its dentition in relation to that of its synonym *Cynodontophis* Werner.

When, however, he refers *collaris* to the synonymy of *gabonensis* (Duméril), it is largely in the sense of *gabonensis* Boulenger, which appears to me to be a composite. Apparently Boulenger had no ex-

amples of the striped form and the material which he referred to *gabonensis* was, in reality, *collaris*.

It seems to me that within the genus we have a trans-African (west to east) series of species or races beginning with the Liberian 5-striped *acanthias*, passing to the 3-striped *g. gabonensis* (inc. *neuwiedi*) and the 2-row spotted *notatus* (inc. *aemulans*) to *g. collaris* (inc. *fulvicollis*, *cauticus* and *weneri*) of the Cameroon and Congo, passing into often entirely and uniformly black *christyi* (inc. *unicolor*) of Uganda and *graueri*.

When better known it may be that *graueri* and *notatus* will have to be regarded as full species on the grounds of their lower number of subcaudals in both sexes, particularly noticeable in the case of *graueri*. Owing to the non-sexing of much of the material referred to in the literature, the following ranges must be regarded as largely hypothetical, but they are founded on a basis of sexed snakes.

Suggested range of scale-counts by sex, the latter sometimes assumed.

Species	♂♂ ventrals	♀♀ ventrals	♀♀ caudals	♂♂ caudals
<i>acanthias</i>	183-195	207-216	16-18	-22
<i>g. gabonensis</i>	219-238	-246	11-	-21
<i>g. notatus</i>	178-228	201-	14-	17-19
<i>g. collaris</i>	200-232	195-252	15-19	19-25
<i>g. christyi</i>	202-217	221-241	15-18	19-24
<i>g. graueri</i>	237-238	254-258	13	16-18

Key to the Species

1. Anal entire; dorsum with pattern of 5 parallel black lines; ventrals 183-216; subcaudals 16-22; range: Sierra Leone to Togoland (or Nigeria, *vide* Angel).....*acanthias*
 Anal divided¹.....2.
2. Dorsum with pattern of 3 parallel black lines; ventrals 219-246; subcaudals 11- 21; range: Gold Coast to Dahomey (with type allegedly from Gabon, *i.e.* French Congo).....*g. gabonensis*
 Dorsum without pattern of parallel black lines.....3.
3. Dorsum with pattern of 2 parallel series of black spots; ventrals 178-228; subcaudals 14-19; range: French Cameroon south to French Congo.....*g. notatus*
 Dorsum uniformly dark.....4.

¹ Allegedly entire in a Congo specimen of *M. g. collaris* *vide* Bocage (1895a, p. 126).

4. Nape and crown pale fawn with dark mottlings; throat white; ventrals 181-252; subcaudals 15-25; range: (Togo! *vide* Werner) southeastern Nigeria south to Angola east to Uganda (west of Ruwenzori) *g. collaris*
 Nape and crown of head entirely black, or with a sharply distinct broad white band across the parietal region 5.
5. Top of head iridescent black like nape and dorsum; throat white or black; ventrals 202-241; subcaudals 15-21; range: western Congo (Poko) east to central Uganda (Mabira Forest). *g. christyi*
 Top of head from snout to behind eyes, black, posterior half of head and nape pure white; ventrals 237-258; subcaudals 13-18; range: eastern Congo (Idjwi Island, Lake Kivu) to central Uganda (Entebbe) *g. graueri*

MIODON GABONENSIS COLLARIS (Peters)

Microsoma collare Peters, 1881, Sitz. Ges. Naturf. Freunde. Berlin, p. 148; Macange, Cuango = Kwango, French Equatorial Africa.

♂ (M. C. Z. 48431) Bundibugyo, U. 22.xii.38.

Distribution. This constitutes the first record for *collaris* in Uganda, but Bundibugyo—in the Bwamba country northwest of the Ruwenzori Mountains—is really a part of the Ituri Forest region.

Variation. Midbody scale-rows 15; ventrals 211; anal divided; subcaudals 23.

Coloration. Quite typical. Head and nape light fulvous with a few dark markings on the frontal region, dorsum iridescent plumbeous with the edges of the scales darker. Below, pure white except for the dorsal coloration impinging on the outer lateral edges of the ventrals.

Measurements. Total length of ♀, 237 (315 + 22) mm.

MIODON GABONENSIS GRAUERI Sternfeld

Miodon Graueri Sternfeld, 1908, Sitz. Ges. Naturf. Freunde Berlin, p. 94: Entebbe, Uganda.

♂ ♀ (M. C. Z. 48432-3) Idjwi Id., B. C. 21-22.ii.39.

Distribution. These constitute the first records of this form in the Belgian Congo; *graueri* being known until now only from the type.

Variation. Midbody scale-rows 15; ventrals 237-258; anal divided; subcaudals 13-16. The ♂ has 237 (type had 238) ventrals, and 16 (type had 18) subcaudals. The ♀ ♀ have 254-258 ventrals and only 13 subcaudals, indicating a slight sexual dimorphism.

Measurements. Total length of ♂ (to go to Mus. Congo Belge) 325 (310 + 15) mm.; of larger ♀ (M. C. Z. 48432) 370 (358 + 12) mm.

Diet. Remains of a blind snake (*Typhlops b. lestradei*) in male, an egg, possibly a lizard's, in one of the females.

Habitat. The two females were taken near the lake shore, where, according to the native captor, the species is usually encountered. The male, however, was killed when crossing a path about a mile below our camp, *circa* 6000 feet? As the type locality, Entebbe, is also on the lake (Victoria) shore, perhaps this race favours such an environment.

APARALLACTUS MODESTUS (Günther)

Elapops modestus Günther, 1859, Ann. Mag. Nat. Hist. (3), 4, p. 161, pl. iv, fig. C: West Africa.

Periaspis plumbeatra Cope, Proc. Acad. Nat. Sci. Philadelphia, p. 252: Liberia.

Elapops (Calamaria) Pctersi Jan, 1862, Arch. Zool. Anat. Fisiol., 2, p. 32: Gold Coast.

Aparallactus bouleengeri Werner, 1896, Verh. Zool. Bot. Ges. Wien, 46, p. 363, pl. vi, figs. 6-6b: Cameroon.

Aparallactus peraffinis Werner, 1897, Verh. Zool. Bot. Ges. Wien, 47, p. 404, pl. ii, fig. 3: Interior of Cameroon.

**Aparallactus ubangensis* Boulenger, 1897, Ann. Mag. Nat. Hist. (6), 19, fig.: Zongo, Ubangi Rapids, Belgian Congo.

Aparallactus flavitorques Boulenger, 1901, Ann. Musée Congo (1), 2, p. 11, pl. iv, fig. 3: Lubué, Kasai, Belgian Congo.

**Aparallactus dolloi* Werner, 1902, Verh. Zool. Bot. Ges. Wien, 52, p. 346: Banzyville, Ubangi River, Belgian Congo.

**Aparallactus congicus* Werner, 1902, Verh. Zool. Bot. Ges. Wien, 52, p. 346: Lingunda, Belgian Congo.

**Aparallactus Batesii* Boulenger, 1907, Ann. Mag. Nat. Hist. (7), 19, p. 325: 5 miles inland from Kribi, French Cameroon.

Aparallactus christyi Boulenger, 1910, Ann. Mag. Nat. Hist. (8), 5, p. 512: Mabira Forest, Chagwe, Uganda.

**Aparallactus nigrocollaris* Chabanaud, 1917 (1916), Bull. Mus. Nat. Hist. Paris, 22, p. 377, figs. 18-19: French Congo.

**Aparallactus nigrocollaris Roucheti* Chabanaud, 1917 (1916), Bull. Mus. Nat. Hist. Paris, 22, p. 378, figs. 20-21: French Congo.

Guyomarchia unicolor Angel, 1923, Bull. Mus. Nat. Hist. Paris, 29, p. 348, figs. 1-4: French Congo (probably from near Sangha).

**Aparallactus Gratieri* Werner, 1924, Sitz. Akad. Wiss. Wien, 133, p. 42: Beni, Belgian Congo.

♂ ♀ (M. C. Z. 48435-6) Mabira Forest, U. 13.xi.38.

♀ (M. C. Z. 48437) Budongo Forest, U. 29.xi.38.

♂ (M. C. Z. 48438) Bundibugyo, U. 22.xii.38.

* Here referred to the synonymy for the first time as a result of a revision of the genus now in MS.

Native name. *Kileba* (Luamba*).

Synonymy. I was particularly anxious to obtain topotypes of *christyi*, a species which Parker (in Pitman, 1937, p. 338) recently detected as synonymous with *modestus*, for I thought it might be possible to recognize it as an eastern form of this sylvicoline snake. On the contrary, however, the generic revision which resulted showed it necessary to add seven additional alleged species (as indicated above with an asterisk) to the already lengthy synonymy. This 'lumping' has not been done in any spirit of desperation, but after careful consideration of the claims of each species in conjunction with a study of the extensive series of *modestus* in the Museum of Comparative Zoölogy. The reasons for this synonymizing will be furnished later upon publication of the revision. The only one of which there could be the slightest doubt is *nigrocollaris* (inc. *roucheti*) which I regard as an aberration; it has twice been taken in Uganda by Pitman.

As long ago as 1923, Schmidt pointed out that this species has teeth which may, or may not, be grooved, but it is only recently that Bogert (1940, p. 43) presented the argument for merging *Elapops* with *Aparallactus*.

Variation. Midbody scale-rows 15; ventrals 135-157; anal entire; subcaudals 36-43; labials 7, the third and fourth entering the orbit.

Measurements. The larger ♂ (M. C. Z. 48438) measures 348 (288 + 60) mm. and smaller ♀ (M. C. Z. 48436) 503 (435 + 68) mm.

Breeding. The latter held 7 eggs, the average size of which is about 25 x 8 mm.

APARALLACTUS JACKSONII (Günther)

Uriechis Jacksonii Günther, 1888, Ann. Mag. Nat. Hist. (6), 1, p. 325, pl. xix, fig. E: Foot of Mt. Kilimanjaro, Tanganyika Territory.

♀ (M. C. Z. 48442) Nchingidi, Rondo Plateau, T. T. 17.v.39.

Variation. Midbody scale-rows 15; ventrals 156; anal entire; subcaudals 44; labials 7, the third and fourth entering the orbit.

Coloration. In life. Above, head black, a six-scale wide black, transverse band, edged before and behind by scale-wide bands of bright yellow, on nape; back and tail a delicate pinkish brown. Below, bright yellow, the lower ends of the black collar not extending on to the ventrals.

Measurements. Total length of this, the largest known ♀, 259 (213 + 46) mm.

APARALLACTUS WERNERI Boulenger

Aparallactus werneri Boulenger, 1895, Ann. Mag. Nat. Hist. (6), 16, p. 172:
Usambara Mountains, Tanganyika Territory.

♂ ♂ (M. C. Z. 48445-6) Magrotto Mtn., T. T. 1.vii.39.

Variation. Midbody scale-rows 15; ventrals 145-148; anal entire; subcaudals 41 & M; labials 6, the second and third entering the orbit.

Coloration. In life. Above, head black, a six-scale wide black, transverse band, separated from the head by a scale-wide olive band, on nape; back and tail olive. Below, bright lemon yellow except for throat which is tinged with whitish.

Measurements. Total length of larger ♂, 308 (255 + 53) mm.

APARALLACTUS CAPENSIS ULUGURUENSIS Barbour & Loveridge

Aparallactus uluguruensis Barbour & Loveridge, 1928, Mem. Mus. Comp. Zoöl., 50, p. 132: Nyange, Uluguru Mountains, Tanganyika Territory.

♂ ♂ ♀ (M. C. Z. 48439-41) Magrotto Mountain, T. T. 1.vii.39.

Remarks. *A. uluguruensis* was based on eleven uniformly plumbeous specimens from the Uluguru and Usambara Mountains, a revisionary study of the genus reveals that it differs in no essential from the pale fawn *capensis* of the savanna except in its much larger size and in colour, moreover, small snakes intermediate in colour are to be found on the recently deforested western Usambara, Kilimanjaro and on Mount Mbololo. I propose to regard *uluguruensis* as a race of *capensis* though the latter is undoubtedly descended from the virgin forest form.

I was in error in referring *A. concolor boulengeri* to the synonymy of *uluguruensis* as has been pointed out by Scortecchi. At the time I attributed less importance to the first lower labials being in contact than I should have done.

Variation. Midbody scale-rows 15; ventrals 140-158; anal entire; subcaudals 43-44; labials 7, the third and fourth entering the orbit.

Diet. A centipede in the stomach of the larger male.

APARALLACTUS CAPENSIS CAPENSIS Smith

Aparallactus capensis A. Smith, 1849, Ill. Zool. S. Africa, Rept., App., p. 16:
Kaffirland to the eastward of Cape Colony.

♀ (M. C. Z. 48443) Ujiji, T. T. 12.iii.39.

♀ (M. C. Z. 48444) Mbanja, T. T. 27.iv.39.

Native name. *Yamitera* (Kimakonde).

Remarks. I now confirm my (1936j, p. 269) previous suggestion that *punctatolineatus* is a synonym of *capensis*. Peter's *nigriceps* is a good species with only 108-123 ventrals and 20-35 subcaudals, but *nigriceps* of Boulenger (1896d, p. 260) is a composite of Peter's original description and a specimen of *capensis*, for the latter may have 6 upper labials, second and third entering the orbit (left side of head of Mbanja snake) or 7 upper labials, third and fourth entering the orbit (right side of head of Mbanja snake), the latter being the normal condition for *capensis* though the former crops up throughout its range as in the Ujiji snake and in the ♀ of a pair collected on Mount Mbololo, Kenya Colony.

In studying the genus, it was interesting to note that a block of six western and northern species invariably possess seven upper labials of which the third and fourth enter the orbit. On the other hand, three eastern species (*verneri*, *turneri* and *nigriceps*) have six labials, the second and third entering the orbit. Three other forms, (*c. uluguruensis*, *c. capensis* and *bocagii*), for *bocagii* is scarcely more than a western form of *capensis*, occupy an intermediate position normally having seven labials but not infrequently six, resulting in confusion with *nigriceps sensu strictu*.

Variation. Midbody scale-rows 15; ventrals 162-162; anal entire; subcaudals 41-44; labials 6-7, see remarks above.

Breeding. At Mbanja, on April 27, a ♀ held 2 eggs, each measuring 31 x 4 mm.

ELAPSOIDEA GÜNTHERII Bocage

Elapsoidea guntherii Bocage, 1866, Journ. Sci. Lisboa, 1, p. 70, pl. i, figs. 3-3b: Cabinda, Portuguese Congo; Bissao, Portuguese Guinea.

♂ (M. C. Z. 48447) Mabira Forest, U. 14.xi.38.

12 (M. C. Z. 48448-56) Magrotto Mtn., T. T. 1-19.vii.39.

Native name. *Kifutu* (Kisambara).

Variation. Midbody scale-rows 13; ventrals 150-157; anal entire; subcaudals 15-25; labials 7, the third and fourth entering the orbit except on left side of M. C. Z. 48453, where it is 8, the fourth and fifth entering.

Measurements. Largest ♂ (M. C. Z. 48448) measures 585 (548 + 37) mm.; largest ♀ (M. C. Z. 48453) only 401 (377 + 24) mm.

Sexual dimorphism. 10 ♂ ♂ have 151-157 ventrals and 19-25 subcaudals while the 3 ♀ ♀ have 150-157 ventrals and 15-16 subcaudals.

Diet. The only food present was a caecilian (*Boulengerula boulengeri*) in the stomach of a Magrotto snake.

Enemies. Two of the males had lost the ends of their tails, perhaps through fighting, one had a very truncated stump.

Habitat. With the exception of the Mabira snake, which I caught in rank grass between the kitchen and back door, the other four that I captured personally were wandering on paths towards evening, their empty stomachs suggesting the cause for their being abroad.

NAJA HAJE HAJE (Linnaeus)

Coluber haje Linnaeus, 1762, in Hasselquist, *Reise Palestine*, p. 386: Lower Egypt.

♂ ♂ (M. C. Z. 47808) Lira, Lango, U. iv-viii.38.

♀ (M. C. Z. 47809) Gulu, Acholi, U. ix-x.38.

Distribution. Lt. Col. C. R. S. Pitman, to whom we are indebted for these juvenile Egyptian cobras, tells me that the species is plentiful on the flats along the eastern shores of Lake Albert where specimens eight feet in length are not uncommon. The largest he has measured was eight and a half feet.

Variation. Midbody scale-rows 21; ventrals 54-60; anal entire (♂ ♂) or divided (♀); upper labials 7, separated from the orbit by suboculars.

NAJA NIGRICOLLIS NIGRICOLLIS Reinhardt

Naja nigricollis Reinhardt, 1843, *Dansk. Vidensk. Selsk. Skrift.*, 10, p. 269, pl. iii, figs. 5 and 7: Guinea.

♀ ♀ (M. C. Z. 48457-8) Kitaya, T. T. 29.iii & 2.iv.39.

♂ ♀ (M. C. Z. 48459-60) Mikindani, T. T. 20.iv.39.

♂ (M. C. Z. 48461) Mbanja near Lindi, T. T. 29.iv.39.

♀ (M. C. Z. 48462) Magrotto Mountain, T. T. 8.vii.39.

Native names. *Liteweo* (Kiyao); *lilekela* (Kimawiha); *lipatera* (Kima-konde at Kitaya); *lipeta* (Kimakonde at Mbanja); *sweela* (Kisambara).

Variation. Midbody scale-rows 21; ventrals 183-204; anal entire; subcaudals 48-58; labials 6, the third entering the orbit.

Coloration. The five southeastern snakes are all of the form *mosambica*, the juvenile from forested Magrotto was uniformly black except for white crossbars on throat.

Measurements. Largest ♂ (M. C. Z. 48460) measures 1228 (1007 + 221) mm.; largest ♀ (M. C. Z. 48459) measures 1061 (880 + 181) mm.

Diet. Four young rats (*Rattus r. kijabius*) in a Kitaya cobra, a large shrew (*Crocidura h. hirta*) in the young Mbanja snake.

Parasites. Ticks (*Aponomma falsolaeve*) and worms at Kitaya.

Enemies. The large Kitaya ♀ has lost practically its entire tail, the stump, long since healed, terminates close behind the anus.

Defence. Mr. H. Tanner of Amboni Estate, near Tanga, tells me that he was called upon to kill one of these cobras on the driveway in front of his house. He shot it at close range with the result that the charge severed head and neck from body, and the blast carried the head and neck to where his son was standing some distance away. The head, rearing on its stump, opened its mouth and discharged two jets of venom at the boy.

This interesting case of reflex action may, I consider, be entirely relied upon, as Mr. Tanner, who formerly kept cobras and other snakes, is deeply interested in natural history. During my brief stay on his estate a native killed a black cobra near my tent, it was not preserved as he had chopped it in half with his bush knife (*panga*).

Venom. Sir Charles Belcher, the ornithologist, with whom I hunted reptiles earlier in the trip, writes (1941) me that, when collecting at Soysambu, near Lake Elmenteita, he encountered four bat-eared fox (*Otocyon m. virgatus*) cubs playing about a big black cobra. The head of the latter was upraised three feet from the ground, and when Sir Charles struck at the reptile with an ashplant he was carrying, the snake discharged its venom full in his face from a distance of about three feet. Fortunately his eyes were protected by the glasses he was wearing, but he received a spray of the bitter tasting venom full in the lips. Later, when washing, he got a fresh taste of the poison.

NAJA MELANOLEUCA Hallowell

Naja haie var. *melanoleuca* Hallowell, 1857, Proc. Acad. Nat. Sci. Philadelphia, p. 61: Gaboon.

♂ ♂ (M. C. Z. 48463-4) Mabira Forest, U. 15.xi.38.

♂ (M. C. Z. 48465) Budongo Forest, U. 22.xi.38.

♂ (M. C. Z. 48466) Bundibugyo, U. 23.xii.38.

5 ♂ ♂, 2 ♀ ♀ (M. C. Z. 48467-71) Idjwi Id., B. C. 19-28.ii.39.

♂ (M. C. Z. 48472) Mikindani, T. T. 20.iv.39.

Distribution. This Mikindani snake involves a mainland south-eastward extension in range of 500 miles. Pakenham has recently collected several on Zanzibar, where, however, they may have been

introduced by escapees from the Wayeye 'snake-charmers' who visit the island from time to time.

Lt. Col. Pitman has recently presented us with examples of this cobra from Lira, Lango Province, and Gulu, Acholi Province, Uganda, where they occur together with *Naja h. haje*.

Native names. *Nsweela* (Luganda); *nehewera* (Lutoro); *bata* (Lumamba); *irizi* (Lulega). Not distinguished from *N. n. nigricollis* by the Makonde and Mawiha at Mikindani.

Variation. Midbody scale-rows 19; ventrals 197-220; anal entire; subcaudals 59-71; upper labials 7, the third and fourth entering the orbit, sixth largest and in contact with postoculars.

Coloration. This usually jet black forest cobra is very variable on Idjwi Island; one ♂ was brown anteriorly, and black posteriorly; some were all black, others brown mottled with black. The latter type of coloration reaches its climax in the Mikindani snake which is light brown peppered with darker in conformity with its savanna habitat in this locality.

Measurements. Largest ♂ (Mikindani) measures 2364 (1960 + 404) mm.; largest ♀ (Idjwi Island) measures 1625 (1355 + 270) mm.

Diet. A lizard (*Algiroides africanus*) was present in the third-grown cobra from Mabira; half-grown egg-eating snakes (*Dasypeltis s. palmarum*) in each of three young or half-grown cobras on Idjwi Island; two new-born rats (*Lophuromys a. laticeps*) in another from the same locality!

At Budongo Forest camp I was summoned at 3:15 one afternoon to catch a cobra which had been disturbed while swallowing a rat on a garden path. The reptile, with rat in mouth, had darted into a long pile of rubbish, mostly matete grass, piled against a fallen and rotting tree trunk. Peering in, I caught a glimpse of its disappearing tail. We cleared the rubbish, turned the log, but failed to find the cobra in the maze of rat holes down which it had vanished.

Parasites. Ticks (*Aponomma falsolaere*) and a heavy infestation of nematodes (*Kalicephalus sp.*; *Ophidascaris naiac*) was present in one of the Idjwi Island cobras.

Habits. The six-pound cobra measuring about seven and a half feet, was killed in the Mikindani bush by a native. The man surprised it sunning, crept up and struck it a blow. The snake made off and climbed a tree. The native then cut two long poles, split one and inserted the other some little way down the cleft; with this weapon he reached up into the tree and caught the snake in the cleft by withdrawing the second pole. After pulling the snake down he was then in a position to

belabour it with the free pole while holding it at a safe distance in the fork of the other. The man told me that the snake made no attempt to 'spit' under conditions where it certainly would have done so if able. He brought the reptile to me under the impression that it was a python and I had some difficulty in convincing him to the contrary.

In this connection it is worth recording that Mr. H. Tanner of Amboni Estate, told me that he had once run over a strange-looking cobra, as large as a python, while motoring not far from my camp at Siga Caves. Looking back he saw the snake in the road, rear up and spread its hood.

PSEUDOHAJE GOLDII (Boulenger)

Naia goldii Boulenger, 1895, Ann. Mag. Nat. Hist. (6) 16, p. 34: Asaba, Niger River, Nigeria.

♂ (M. C. Z. 48473) Bundibugyo, U. 22.xii.38.

Distribution. This three-pound snake, is not only the second record for its occurrence in Uganda, but, being only 7 feet, 1 inch in length, is surpassed by several Congo snakes recorded by Bogert (1942a, p. 6) in his important paper re-establishing Günther's genus *Pseudohaje*.

Native names. Neither Bwamba nor Batoro distinguish it from *N. melanoleuca* to which they apply the same names, viz. *bata* and *nehewera*.

Variation. Midbody scale-rows 15; ventrals 199; anal entire; subcaudals 82; labials 7, the third and fourth entering the orbit.

Coloration. This is as described by Boulenger except that the anterior ventrals are pink in alcohol, not white.

Measurements. Total length of ♂, 2175 (1730 + 445) mm.

DENDROASPIS ANGUSTICEPS (Smith)

Naia angusticeps A. Smith, 1849, Illus. Zool. S. Africa, Rept., pl. lxx: Natal.

5 ♀ ♀ (M. C. Z. 48474-6) Kitaya, Ruvuma R., T. T. 25-30.iii.39.

♂ ♀ (M. C. Z. 48477-8) Nchingidi, Rondo Plat., T. T. 11.v.39.

2 ♀ ♀ (M. C. Z. 48479-80) Magrotto Mountain, T. T. 8-12.vii.39.

Native names. *Namasambi* (Kiyao); *namahamba* (Kimakonde); *nqoe* (Kisambara, but it is thought to be the adult of *Philothamnus s. semi-variegatus*).

Variation. Midbody scale-rows 19-23; ventrals 111-126; anal divided; upper labials 7-9, the fourth entering the orbit.

Coloration. The smaller Magrotto ♀ was a rich green, very sparsely flecked with yellow above and below; the larger Magrotto ♀ was olive, though about 300 mm. smaller than the very rich green Nchingidi ♂.

Measurements. The only ♂ (M. C. Z. 48477) measures 7 feet (1640 mm. from snout to anus, end of tail missing); the largest ♀ (M. C. Z. 48474) measures 1981 (1515 + 466) mm.

Diet. A short-tailed nestling rodent in one Kitaya snake; three young rats in the smaller Magrotto mamba.

At Nchingidi my attention was attracted by the vociferous calling of a bulbul (*Phyllastrephus flavostriatus tenuirostris*) in thick forest. I shot the bird and my gunbearer ran in to recover the corpse; as he did so the flickering of a leaf in the dense verdure from whence the bulbul had fallen, directed my gaze to a large and beautiful green mamba which was almost 'swimming' over the foliage. I halted it with a charge of No. 12 from the .410, but as it seemed to be recovering I gave it No. 8 from the second barrel in the heart while it was still twenty feet above ground. Its stomach was empty.

DENDROASPIS JAMESONI KAIMOSAE (Loveridge)

Dendraspis jamesoni kaimosae Loveridge, 1936, Proc. Biol. Soc. Washington, 49, p. 64; Kaimosi, Kakamega, Kenya Colony.

♂ (M. C. Z. 48481) Mabira Forest, U. 18.xi.38.

4 ♂ ♂ 8 ♀ ♀ (M. C. Z. 48482-91) Idjwi Id., B. C. 18-28.ii.39.

Native names. *Temankima* (Luganda); *mkubwe* (Lulega).

Variation. Midbody scale-rows 15-17; ventrals 208-226; anal divided; subcaudals 96-111; labials 8, rarely 7, the fourth entering the orbit.

The tails, being uniformly black, are characteristic of the eastern race (*kaimosae*), but the Lake Kivu series, coming as they do from a geographically intermediate area, increase the overlap between the subcaudal counts of the two races, that of the western form (*jamesoni*) being 103-122.

Measurements. Largest ♂ (M. C. Z. 48482) measures 2087 (1592 + 495) mm.; the largest ♀ (M. C. Z. 48484) only 1977 (1520 + 457) mm., though when freshly killed this same snake measured 2052 (1580 + 472) mm. Eight of the series are over six feet in length.

Breeding. On February 22, small ova were present in the largest of the Idjwi females; evidently it was not their breeding season.

Diet. In addition to unidentifiable rodent remains, the following

rats and mice were recovered from the stomachs of six of the Idjwi snakes: (1) one *Rattus r. kijabius*; (2) six half-grown *Praomys j. montis*; (3) two *Leggada g. grata*; (4) four new-born *Lophuromys a. laticeps*; (5) two *Lophuromys a. laticeps*; (6) an adult *Dasymys b. medius*.

Parasites. Nematodes (*Kaliciphalus sp.*) in an Idjwi snake.

Enemies. The Mabira ♂ was killed on the road by a native. The six-and-three-quarter-foot ♀ by a woman who said that it chased a rat from the forest into her hut; a third very large example was also killed by a woman, but in the bush.

VIPERIDAE

CAUSUS RHOMBATUS (Lichtenstein)

Sepeidon rhombatus Lichtenstein, 1823, Verz. Doubl. Mus. Berlin, p. 106:
No locality.

- 3 ♂ ♂ 1 ♀ (M. C. Z. 47837) Gulu, Acholi, U. iv-viii.38. (C.R.S.P.).
2 ♀ ♀ (M. C. Z. 47838) Lira, Lango, U. iv-viii.38. (C.R.S.P.).
2 ♂ ♂ (M. C. Z. 44117) Ugano, Matengo, T. T. 1935-6. (H. Zerny).

Distribution. I am indebted to Lt. Col. Pitman for the Uganda specimens; it seems strange that I did not encounter this common night adder during the eight months of my *safari*, good testimony to the fact that this species is not a forest-dweller.

Variation. Midbody scale-rows 17-19; ventrals 147-155; anal entire; subcaudals 19-29 pairs; labials 6.

CAUSUS RESIMUS (Peters)

Heterophis resimus Peters, 1862, Monatsb. Akad. Wiss. Berlin, p. 277, pl. —,
fig. 4: Gebel Ghule, Sennar, Anglo-Egyptian Sudan.

- ♂ ♀ (M. C. Z. 48492-3) Nyakabande, U. 27.i.39.

Variation. Midbody scale-rows 21; ventrals 134-145; anal entire; subcaudals 20-22 pairs; labials 6.

Measurements. The ♂ measures 491 (450 + 41) mm.; ♀ measures 220 (200 + 20) mm.

Breeding. On January 27, 6 eggs measuring 36 x 16 mm. in the ♀.

Diet. A young toad (*Bufo r. regularis*) in her stomach.

CAUSUS DEFILIPPII (Jan)

Heterodon De Filippii Jan, 1862, Arch. Zool. Anat. Fisiol., 2, p. 225: Africa.

2 ♂ ♂ 2 ♀ ♀ (M. C. Z. 48494-6) Mikindani, T. T. 12.iv.39.

♀ (M. C. Z. 48497) Mbanja, Lindi, T. T. 1.v.39.

2 ♂ ♂ 2 ♀ ♀ (M. C. Z. 48498-501) Nchingidi, T. T. 13.v.39.

Distribution. Add Amboni Estate, near Tanga, T. T. 24. vi. 39.

Native names. *Chipili* (Kimawiha); *lipili* (Kimakonde). Neither distinguishing it from the Puff Adder (*Bitis arietans*).

Variation. Midbody scale-rows 16 (M. C. Z. 48494 only) or 17; ventrals 112-122; anal entire; subcaudals 13-15 pairs; labials 6.

Measurements. Largest, a ♀ (Field Museum), measures 412 (382 + 30) mm.; all the others were under 270 mm. in total length.

Enemies. One recovered from stomach of eagle (*Circætus cinereus*) at Amboni.

CAUSUS LICHTENSTEINII (Jan)

Heterodon Lichtensteinii Jan, 1859, Revue Mag. Zool., p. 511: Gold Coast.

♂ ♀ (M. C. Z. 48502-3) Mabira Forest, U. 19.xi.38.

2 ♂ ♂ 2 ♀ ♀ (M. C. Z. 48504-7) Budongo Forest, U. 22-30.xi.38.

♀ (M. C. Z. 48508) Kibale Forest, U. 9.xii.38.

Variation. Midbody scale-rows 15; ventrals 136-147; anal entire; subcaudals 16-21 pairs; labials 6.

Measurements. Largest ♂ (M. C. Z. 48504) measures 598 (540 + 58) mm.; largest ♀ (M. C. Z. 48503) measures 549 (507 + 42) mm.

Breeding. At Mubango, on November 19, 6 eggs measuring 15 x 9 mm. in ♀; at Bisu, Budongo, on November 30, 8 eggs measuring 10 x 5 mm. in ♀; at Kibale Forest, on December 12, 4 eggs measuring 17 x 6 mm. in ♀.

Parasites. Nematodes (*Ophidascaris sp.* and *Proteocephalus sp.*) in a Budongo snake.

Temperament. Our tent boy disturbed two of these velvety-green night adders on the path between our fire and tent. When I reached the spot the two snakes were returning from the rank vegetation bordering the path. The anterior third of each was raised high, and so flattened that for a second I thought that they were young cobras. They were almost intertwined, their lower portions so close together that I pinned both down with my T-ended stick. At this, one reptile began to bite savagely at the other's neck, enabling me to seize both together by their necks with the forceps. I supposed it was a court-

ship performance that I had interrupted, but on examination, after anaesthetization, found both were males (M. C. Z 48504-5) which were presumably fighting.

BITIS ARIETANS (Merrem)

Vipera arietans Merrem, 1820, Vers. Syst. Amphib., p. 152: Cape of Good Hope.

♂ (M. C. Z. 48509) Budongo Forest, U. 6.xii.38.

♀ (M. C. Z. 48510) Idjwi Island, B. C. 3.iii.39.

♀ (M. C. Z. 48511) Ujiji, T. T. 13.iii.39.

♂ (M. C. Z. 48512) Kitaya, T. T. 31.iii.39.

♂ (M. C. Z. 48513) Mikindani, T. T. 16.iv.39.

♂ (M. C. Z. 48514) Siga Caves, T. T. 8.vi.39.

Native names. *Viserosero* (Lulega); *lipili* (Yao and Kimakonde); *chipili* (Kimawiha). The last two names are applied to *Causus* also.

Variation. Midbody scale-rows 31-34; ventrals 133-141; anal entire; subcaudals 13-33; labials 12-14.

Measurements. The entire series are juvenile, the smallest (M. C. Z. 48514) measures only 209 (185 + 24) mm.

Habitat. At Siga I shot a wood hoopoe in a tree overhanging the path leading to my tent; as my gunbearer stooped to pick up the dead bird, which had fallen on the leaf-strewn path, he paused, for right beside it was the young puff adder.

BITIS GABONICA (Duméril & Bibron)

Plate 3, fig. 2.

Echidna Gabonica Duméril & Bibron, 1854, *Erpét. Gén.*, 7, p. 1428, pl. lxxx b: Gaboon.

♀ (M. C. Z. 48415) Budongo Forest, U. 26.xi.38.

♂ ♀ (M. C. Z. 48416) Nchingidi, T. T. 12.v.39.

1 ♂ 2 ♀ (M. C. Z. 48417) Magrotto Mtn., T. T. 1-9.vii.39.

Distribution. An even more southeasterly record in Tanganyika Territory than Nchingidi, Rondo Plateau, is that of Lulindi, where, according to Dr. L. Stirling of the U. M. C. A., it occurs in a patch of forest at an altitude not much over a thousand feet.

Native name. *Moma* (Kisambara).

Variation. Midbody scale-rows 38-43; ventrals 128-140; anal entire; subcaudals 20-26; labials 14-16.

Measurements. One ♂ measures 1155 (1010 + 145) mm.; largest ♀ measures 1311 (1225 + 86) mm.; both from Magrotto. This 4 foot 5 inch ♀ is, however, easily surpassed by one of 5 feet 8½ inches which Lt. Col. Pitman informs me (17.xi.34) he obtained in the Mabira Forest.

It is interesting to note the difference between the measurements of freshly killed Magrotto snakes and that of their dried skins though care was taken not to stretch the latter unduly.

♂	measured	1155 mm.	in the flesh,	its dried skin	1300 mm.
♀	"	1162 mm.	"	"	1210 mm.
♀	"	1311 mm.	"	"	1560 mm.

Weights. A 3 foot 9¼ inch ♂ weighed 4 lbs.; its stomach being empty.
 3 foot 9⅞ inch ♀ weighed 5 lbs.; stomach held 4 rats.
 4 foot 3 inch ♀ weighed 8 lbs.; stomach held 2 rats.
 4 foot 5 inch ♀ weighed 11 lb.; stomach held 1 rat, and oviducts eggs as listed below.

Breeding. At Magrotto, on July 1, 43 eggs, of which the largest measured 35 x 24 mm., in a ♀. No other ♀ ♀ taken were gravid.

Diet. Four house rats (*Rattus r. kijabius*) in Budongo and Magrotto snakes, three field rats (*Mastomys c. durumae*) in a Magrotto snake.

Parasites. Nematodes (*Ophidascaris sp.* and *Kaliecephalus sp.*) numerous in Budongo snakes, a rodent thread worm (*Mastophorus m. muris*) and porocephalid larva in a Magrotto snake.

Defence. Mr. W. E. Hartmann, formerly engaged in making zoological collections for a Swiss museum, told me how in the eastern Usambaras he had once found himself standing beside one of these huge vipers which he had not noticed, though he had been standing some little time. Having a spike-ended stick in his hand, he drove the point down through the snake's neck close behind the head, transfixing it to the ground. Thereupon the snake opened its mouth three times and each time two jets of venom issued from the fangs and were projected to a distance of a foot or two. They were not directed at Mr. Hartmann, however, for he was standing beside, and somewhat behind, the head.

This species produces so much venom that the cloudy white liquid dripped from one's fangs as I pushed back the *vagina dentis* to show the teeth to Fimbu, a headman on Magrotto Estate, who had lost an arm through the bite of one of these snakes. Fimbu told me that he had retired to his hut for several days after being bitten, and was treated with native medicines. His arm, however, 'went bad' and was amputated by a mission doctor.

Elsewhere I (1940a, p. 502) have described the sluggishness of one of these big snakes on a hot afternoon. Secure in its camouflage, it remained motionless while search was being conducted in close proximity, nor even when first picked up did it attempt to struggle or strike.

BITIS NASICORNIS (Shaw)

Coluber Nasicornis Shaw, 1802, Nat. Miscell., 3, pl. xciv: Interior of Africa (from the master of a Guinea vessel).

♂ ♀ (M. C. Z. 48518-9) Mabira Forest, U. 8.xi.38.

3 ♂ ♂ (M. C. Z. 48520-1) Bundibugyo, U. 21.xii.38.

4 ♂ ♂ 3 ♀ ♀ (M. C. Z. 48522-3) Idjwi Id., B. C. 17-28.ii.39.

Native names. *Salambwa* (Luganda); *mpoma* (Lutoro); *heli* (Lumamba); *mpili* or *mpiri* (Lulega).

Variation. Midbody scale-rows 29-40; ventrals 118-131; anal entire; subcaudals 19-30; labials 15-19.

Coloration. Males, irrespective of size, have bellies which are marbled and mottled like those of the females.

Measurements. Largest ♂ measures 824 (710 + 114) mm.; largest ♀ only 875 (805 + 70) mm., both from Idjwi Island.

Breeding. Females non-gravid in both November and February.

Diet. Three house rats (*Rattus r. kijabius*) in Mabira and Idjwi snakes, a rat (*Lophuromys a. laticeps*) in other Mabira viper; rodent fur in two other Idjwi reptiles.

ATHERIS SQUAMIGERA SQUAMIGERA (Hallowell)

Echis squamigera Hallowell, 1854, Proc. Acad. Nat. Sci. Philadelphia, p. 193: Near the Gaboon River, Guinea, *i.e.* French Congo.

4 (M. C. Z. 48524-6) Mabira Forest, U. 12.xi.38.

Variation. Midbody scale-rows 19-22; ventrals 154-161; anal entire; labials 9-12.

Measurements. Largest ♂ measures 537 (445 + 92) mm., but the other two are only one or two mm. shorter; ♀ measures 655 (555 + 100) mm.

Diet. A pigmy mouse (*Leggada sp.*) in one, unidentifiable rodent fur in another.

Parasites. Ticks (*Aponomma falsolaere*) were present on one of these vipers.

ATHERIS NITSCH EI NITSCH EI Tornier

Plate 3, fig. 3.

Atheris nitschei Tornier, 1902, Zool. Jahrb. Syst., **15**, p. 589, fig.: Mpororo Swamp, southwest Uganda.

Atheris woosnami Boulenger, 1906, Ann. Mag. Nat. Hist. (7), **18**, p. 37: Mubuku Valley, Mount Ruwenzori, Uganda.

5 (M. C. Z. 48527-30) Mihunga swamp, U. 13-18.xi.38.

1 (M. C. Z. 48531) Nyakabande, Ruanda, U. 28.i.39.

4 (M. C. Z. 48532-5) Mushongero, Ruanda, U. 1.ii.39.

22 (M. C. Z. 48536-50) Idjwi Id., B. C. 17-28.ii.39.

Native names. *Nchia* (Lukonja); *wahimberi* (Lutoro); *chirazi* or *kirazi* (Lulega).

Taxonomy. The first five specimens are topotypes of *woosnami* as the swamp is in the Mubuku Valley immediately below Woosnam's camp on the Mihunga ridge. The next five snakes must be near topotypes of *nitschei* according to the location of Mpororo district in Steiler's atlas, though I have failed to locate any particular swamp to which the name is especially applied.

The series from Lake Kivu are somewhat intermediate between the Uganda material and the snake from Tanganyika Territory recently described by Bogert (1940, p. 104) as *A. n. rungwensis*, and which may be distinguished by the strongly keeled gulars. This additional material reveals that the other characters cited by Bogert are not constant enough to be dependable, though the fact that there is a definite trend for increased head scales as between the Uganda snakes and those from the Congo, makes it appear possible that when more material of the southern form is available an average difference will be demonstrable.

With the object of emphasizing this trend in lepidosis, the scale-counts of the Uganda (U) snakes are separated from those of the Congo (C) as follows.

Variation. Midbody scale-rows 27-29 (U), 25-33 (C); ventrals 142-162 (U), 150-162 (C); anal entire; subcaudals 38-51 (U), 44-51 (C); labials 9-12 (U), 10-13 (C); interorbital scales across crown 8-12 (U), 9-13 (C); circumorbital scales 12-16 (U), 13-17 (C); scales between eye and nasal 2-4 (U), 3-5 (C); scales between mental and first ventral 5-7 (U. & C).

The type of *rungwensis* had 12 supralabials, a condition found on

one or both sides of the head in seven of the above series; *rungweensis* had 13 interorbital scales, as have six of these snakes; *rungweensis* had 4 scales between eye and nasal, as have three snakes but eighteen more have 3 scales in the upper row and 4 in the lower; *rungweensis* had 7-8 scales between mental and first ventral, three snakes in my series have 7.

Coloration. In life. ♀ (M. C. Z. 48528) Above, pale yellowish green, a conspicuous black arrow-head marking on crown, an obsolescent vertebral line, becoming more definite on posterior third of body and on tail where it is almost zigzag, is flanked along its entire length by black diamond-shaped or triangular spots; a black line from end of snout through orbit. Below, uniform greenish yellow except on tail which has an ill-defined, dark olivaceous, median line that broadens on tip to cover the entire under surface.

♂ like the ♀ but with dusky streak along entire length of belly.

Measurements. Largest ♂ (M. C. Z. 48537) measures 672 (555 + 117) mm.; largest ♀ (Congo Mus.) measures 646 (555 + 91) mm.; smallest snake, a ♂ (M. C. Z. 48535), measures 204 (172 + 32) mm.

It should be noted, however, that there is a considerable shrinkage between specimens measured in the field and later as alcoholics. Thus the beautiful pair captured at Mihunga, as described below, measured respectively ♂ 623 (520 + 103) mm. in the field, 605 (505 + 100) mm. in alcohol, while the ♀ was 620 (532 + 88) mm. in the field, and 619 (537 + 82) mm. in alcohol.

Breeding. On January 18 this ♀ held 9 embryos, of which a ♂ measured 60 (50 + 10) mm. No other females were gravid.

Diet. Pigmy mice (*Leggada g. grata*) in stomachs of snakes from Mihunga swamp and Idjwi Island; a shrew (*Crocidura ? h. hildegardae*) in another of the island vipers.

Parasites. The Mushongero adult was heavily infested with tapeworms (*Ophiotaenia sp.*) and nematodes (*Ophidiscarus sp.*), while the stomachs of many Idjwi snakes were similarly parasitized as well as with *Capillaria sp.* and *Kaliciphalus sp.*

Habitat. In the late afternoon, (one was taken sunning at 4 p.m., the other at 5 p.m. or three quarters of an hour after the sun had dropped behind the upper Mihunga ridge,) I caught a pair of fine adults as they lay coiled like plates on the top of dense tangles of creepers which smothered the elephant grass growing along the banks of the little stream which meanders through the swamp. Both reptiles were at a height of six feet or more from the ground and I was able to seize each of them by the neck with forceps without trouble.

When I transferred them from the forceps to my fingers they gaped widely and raised their long fangs.

At Mushongero, where there is little, if any, elephant grass, these vipers live in enormous beds of papyrus.

Though 'tree viper' is something of a misnomer, and I do not regard them as sylvicoline, I was following a path through heavy forest on Idjwi Island when my gunbearer remarked in the vernacular "You are not interested in collecting snakes then?" Turning at this sarcastic shaft, I saw him regarding one of these vipers. The snake, at a height of three feet from the ground, was ensconced in a shrub that I had just passed, in fact I must almost have brushed against it; a bar of sunlight striking down through a rift in the forest canopy, illuminated the spot.

Apparently then, the requirements of these vipers — apart from small mice and frogs — is a moist or humid habitat with vegetation in which they can climb. Such conditions may be found on the edges of lakes, in swamps, or on the outskirts of virgin forest.

ATRACTASPIS IRREGULARIS (Reinhardt)

Elaps irregularis Reinhardt, 1843, Dansk. Vidensk. Selsk. Skrift., 10, p. 264, pl. iii, figs. 1-3: Gaboon.

Atractaspis schoutedeni Witte, 1930, Revue Zool. Bot. Africaine, 19, p. 224, figs. 1-3: N'Goma, north of Lake Kivu, Belgian Congo.

♂ (M. C. Z. 48551) Mabira Forest, U. 12.xi.38.

♀ (M. C. Z. 48552) Budongo Forest, U. 1.xii.38.

♂ ♀ (M. C. Z. 48553-4) Bundibugyo, U. 24.xii.38.

♂ (M. C. Z. 48555) Goma, B. C. 13.ii.39.

Synonymy. *A. schoutedeni* was based on a single specimen which its author stated differed only from *irregularis* in (1) Its frontal being longer than broad, instead of as long as broad. Actually both conditions are common in *irregularis*, the frontal being longer than broad in the Budongo, one Bundibugyo, and the Goma snake listed above. (2) The first lower labials are just separated, instead of being broadly in contact, behind the mental.

I consider this to be an individual aberration in the type of *schoutedeni*, and, as *irregularis* occurs in the same locality, cannot recognize a species based on a single character. See also remarks on *katangae* below.

Variation. Midbody scale-rows 23-25; ventrals 219-252; anal divided; subcaudals 22-27, paired; labials 5, the third and fourth enter-

ing the orbit; first lower labial in contact with its fellow behind the mental.

Measurements. Largest ♂ (M. C. Z. 48551) measures 457 (425 + 32) mm.; larger ♀ (M. C. Z. 48552) measures 656 (621 + 35) mm.

ATRACTASPIS BIBRONII Smith

Atractaspis bibronii A. Smith, 1849, Illus. Zool. S. Africa, Rept., pl. lxxi: Eastern districts of Cape Colony.

Atractaspis katangae Boulenger, 1901, Ann. Mus. Congo, Zool., 2, p. 13, pl. v, figs. 2-2c: Lofoi, Katanga, Belgian Congo.

2 ♂ ♂ (M. C. Z. 48557-8) Ujiji, T. T. 13.iii.39.

3 ♂ ♂ 4 ♀ ♀ (M. C. Z. 48559-65) Mbanja, T. T. 27-30.iv.39.

♀ (M. C. Z. 48560) Nchingidi, T. T. 13.v.39.

♀ var. (M. C. Z. 48556) Amboni Estate, T. T. 21.vi.39.

Native name. *Mbitu* (Kimakonde at Mbanja, but applied to any limbless burrowing reptile).

Synonymy. *A. katangae* was based on a single juvenile specimen which its author compared with *aterrima*, considering its snout rounded, instead of cuneiform, a point often difficult to decide, particularly in the young. During the forty years since its description, four further examples have been recorded, viz. Katanga (Witte, 1930i); Msamwia, Ufipa, T. T. (Sternfeld, 1910a); and Elisabethville, Katanga (Witte, 1933m).

One of the latter (now M. C. Z. 42978), a juvenile ♀, has been carefully studied and its snout, like that of the Amboni snake listed above, is cuneiform, differing quite noticeably from that of the Uluguru *aterrima* in the collection of the M. C. Z. (23466).

The only other ways in which *katangae* allegedly differs from *bibronii*, within whose range it occurs, is (1) Midbody scale-rows 25, instead of 21-23, but our Elisabethville snake has 23 which is the normal number in tropical Africa. As most other well-known species of the genus *Atractaspis* have a range of two more or two less than the normal number, this minor difference should carry little weight. (2) The posterior point of the mental is in contact with the anterior sublinguals, thus separating the first labials. Now that a snake (M. C. Z. 48556) with this condition has turned up at Amboni, near Tanga on the East Coast, it does not seem unreasonable to assume that it is an individual aberration (*cf. irregularis* + *schoutedeni* above) of which there is a marked strain in the Katanga region, but insufficiently numerous to be regarded as a race, surrounded as they are by typical *bibronii*.

For the convenience of those who may entertain doubts, however, I have separated the data below.

Variation. *bibronii* type (M. C. Z. 48557-60). Midbody scale-rows 21-23; ventrals 224-252; anal entire; subcaudals 17-26, single; labials 5, the third and fourth entering the orbit; first lower labial broadly in contact with its fellow behind the mental.

A. katangae type (M. C. Z. 48556). Midbody scale-rows 23; ventrals 259; anal entire; subcaudals 23, single; labials 5, the third and fourth entering the orbit; first lower labial well separated from its fellow by the mental which is in contact with the sublinguals.

Measurements. Largest ♂ (M. C. Z. 48557) measures 429 (397 + 32) mm.; largest ♀ (M. C. Z. 48556) measures 504 (476 + 28) mm.

Dict. At Mbanja a naked nestling shrew (*Crocidura h. hirta*) was recovered from one, three large and one small nestling mice (*Leggada b. vicina*) in another.

Habitat. I caught the largest male under rotting vegetation in a banana plantation at Ujiji. Kizamba unearthed the Nchingidi snake in forest close to camp, and, under the supposition that it was harmless, grabbed its head in his hand and so carried it back to camp. I captured the largest female when she was turned up by the tractor engaged in spreading piles of rotting vegetation in a cleared sisal plantation at Amboni.

GEKKONIDAE

CNEMASPIS QUATTUORSERIATUS (Sternfeld)

Gonatodes quattuorseriatus Sternfeld, 1912, Wiss. Ergeb. Deut. Zentral-Africa-Exped. 1907-1908, 4, p. 202, pl. vi. fig. 1: Rugege Forest and Kisenyi, Lake Kivu, Belgian Ruanda-Urundi; Uvira, Lake Tanganyika, Belgian Congo.

♂ (M. C. Z. 47305) Kibale Forest, U. 17.xii.38.

Eggs (M. C. Z. 47306) Idjwi Island, B. C. 3.iii.39.

Remarks. To some extent this Kibale gecko bridges the narrow gap which separates *quattuorseriatus* from *dickersoni* (Schmidt) of the northeastern Belgian Congo, which Bogert tells me cannot be regarded as even subspecifically distinct.

Variation. Within the known range of variation except for having (1) 7 lower labials on right side of head, (2) the upper, or dorso-lateral, row of tubercles is almost non-existent, being represented only by one or two scattered tubercles, (3) 6 preanal pores.

Measurements. ♂ measures 66 (31 + 35) mm. A hatchling only 27 (14 + 13) mm.

Breeding. On March 3, on Idjwi Island, a dozen eggs measuring 7 x 6 mm., were found in crevices of bark and among debris at the foot of two large trees. The eggs contained embryos, one egg which hatched resulted in the little gecko whose measurements are given above.

Habitat. The male was taken just before sunset as it was running up a tree trunk. Intensive search at Kibale and on the Upper Mulinga failed to discover any more of these elusive geckos.

CNEMASPIS AFRICANUS ELGONENSIS Loveridge

Cnemaspis africanus elgonensis Loveridge, 1936 (1935), Proc. Zool. Soc. London, p. 820: Above Sipi, w. slopes of Mount Elgon, Uganda.

♀ & eggs (M. C. Z. 47304) Mubuku Valley, U. 7.i.39.

Distribution. This constitutes the first record of the occurrence of this species on the Ruwenzori Mountains and, at the same time, forms a westerly extension of its range.

Correction. In the diagnosis of this species (*loc. cit.*) I made the stupid mistake of transposing the number of preanal pores of *africanus* to *elgonensis* and *vice versa*. The present individual, being a poreless ♀, cannot be determined on this important characteristic of the race.

Variation. It agrees with the typical form, *a. africanus*, in having (1) a single granule between the supranasals, (2) in having five granules in addition to the rostral surrounding the nostril, (3) 8 upper labials. None of these characters is of importance except the first, which was found to vary even in the type series.

Measurements. ♀ measures 120 (56 + 64) mm.

Breeding. Between January 1 and 7, we unearthed more than a dozen eggs, each measuring about 11 x 9.5 mm.

Habitat. This gecko is exceedingly scarce, or difficult to find, in the Ruwenzori forests. As I devoted so much time to its acquisition, it might be of interest to publish the details. Shortly after our arrival in the Mubuku Valley we started digging about the bases of the larger trees and unearthed three pairs of *Cnemaspis* eggs around the bole of the largest, a gigantic old tree with some holes at its base and hollow branches visible at a height of twenty feet from the ground. On subsequent days we found four more pairs of eggs at the base of as many trees of which we thoroughly excavated round about a hundred. A special reward of ten cents was offered for the first specimen which

should be captured, but during the whole week only one was sighted and it contrived to slip into a hole and escape.

Night after night I visited the big tree with a flashlight and scanned its trunk as well as those of many others. Morning after morning, during the few hours of sunshine vouchsafed to us, we examined trunks in case geckos had been tempted to descend to sun themselves. We constructed a twelve-foot ladder with four-foot subsidiary, but failed to reach the two hollow branches of the big tree, then we felled a tree against the giant and Kizamba, our most accomplished climber, ascended and chopped open the hollow branch, but all to no purpose.

Our last morning for collecting dawned after a torrential downpour the previous evening. Kizamba, on his own initiative, went to inspect the big tree upon whose trunk a shaft of sunlight was playing, illuminating a fissure which was five feet from the ground. On the edge of this fissure he glimpsed a gravid female basking; she promptly vanished into the crevice, but he was successful in extracting her!

CNEMASPIS AFRICANUS AFRICANUS (Werner)

Gymnodactylus africanus Werner, 1895, Verh. Zool. Bot. Ges. Wien, **45**, p. 190, pl. v, fig. 5: Usambara Mountains, Tanganyika Territory.

2 ♂ ♂ 2 ♀ ♀ & eggs (M. C. Z. 47301-3) Magrotto Mtn., T. T. 5.vii.39.

Distribution. Also a tail of one of these geckos from the Siga Caves. These caves, on the banks of the Mkulumuzi River, are surrounded by gallery forest which has suffered considerably. The presence of this sylvicoline gecko in the lowlands helps to harmonize the earlier German records of its occurrence at Tanga (M. C. Z. 21918) Kuettner leg.

Correction. In my revision of this genus, I (1936a, p. 818) made the foolish mistake in the diagnostic key of switching the number of preanal pores of *C. a. africanus* with those of its subspecies *elgonensis*.

Variation. These fall within the range given in the redescription of *africanus* cited above.

Coloration. In life. ♂. Above, olive green mottled with brown and black. Below, throat white, belly, base of tail, thighs, groin, and anterior aspect of tibia, chrome.

Breeding. On July 5, a ♀, together with one egg, measuring 9.5 x 7.5 mm., and evidently just laid, were found beneath a log. Two fresh eggs, measuring 9 x 7.5 mm. were dug from a hole at the base of a tree. Unfortunately one hatched on the journey to the States and the gecko is too dried to measure. In all a score of eggs were collected.

Habitat. I observed a ♂ basking at 9 a.m. where a beam of sunlight was striking through the canopy into the interior of a partially decayed tree in the forest beside the river. The gecko immediately descended, disappearing into a hole among the roots, from this I dug it together with the two eggs mentioned above.

At Siga Caves I saw a gecko basking at edge of a crevice in the cliff face. I fired at it from afar so as not to damage it. The lizard, however, discarding its tail, disappeared into the fissure, from which it could not be retrieved.

HEMIDACTYLUS TROPIDOLEPIS BARBOURI subspec. nov.

Hemidactylus tropidolepis Andersson (not Mocquard), 1912, Jahrb. Nassau. Ver. Naturk. Wiesbaden, **65**, p. 227, figs. 1-4 (Tanga). Barbour & Loveridge, 1928, Mem. Mus. Comp. Zoöl., **50**, p. 142 (Kilindini).

Hemidactylus tropidolepis squamulatus Loveridge (not Tornier), 1933, Bull. Mus. Comp. Zoöl., **74**, p. 284 (Kilindini), and *idem* **79**, p. 287 (Changamwe).

5 (M. C. Z. 47320-2) Siga Caves, Tanga, T. T. 13.vi.39.

7 (M. C. Z. 47323-8) Opposite Kilindini, K. C. 25.vii.39.

Type. Museum of Comparative Zoölogy, No. 40907, an adult ♀ from Changamwe, near Mombasa, Kenya Colony, collected by Arthur Loveridge, July 4, 1934

Paratypes. Museum of Comparative Zoölogy, Nos. 24649-50 and 30447, from Likoni on mainland opposite Kilindini, Mombasa, and the material listed above.

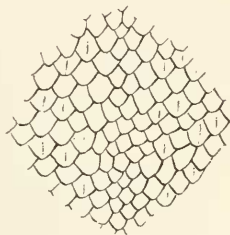
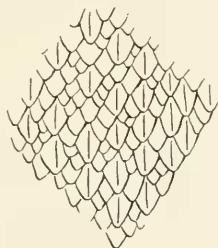
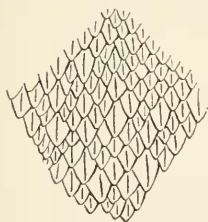
History. Andersson (1912) with scanty material, decided to merge *tropidolepis* (Somaliland), *floweri* (Sudan), *squamulatus* (Kenya and Tanganyika) together with a Tanga gecko which he regarded as intermediate in certain respects. Barbour & Loveridge (1928) with two geckos from Likoni opposite Kilindini and no *tropidolepis* material, accepted Andersson's conclusions. Later, realizing the distinctness of the southern gecko, I (1933, 1936) erroneously applied Tornier's name *squamulatus* to two further specimens.

One of the principal objectives of my recent visit to Tanga was to obtain an adequate series of Andersson's gecko. Now, with Kenya examples of all three—*tropidolepis*, *squamulatus* and the Tanga form, it is necessary to describe the latter and I take pleasure in naming it for Dr. Thomas Barbour, who has so generously furthered these studies of African herpetofauna.

Diagnosis. It belongs to that section of the genus characterized by the possession of imbricate scales, instead of granules or tubercles on the dorsum. From its nearest allies it may be differentiated as follows:

Character	<i>H. t. tropidolepis</i>	<i>H. t. squamulatus</i>	<i>H. t. barbouri</i>
Dorsal scales	Considerable disparity in size. Both large and small keeled.	Great disparity in size. Only largest strongly keeled.	Little disparity in size. Only largest feebly keeled.
Median sub-caudal scales			
Male pores	6-8	10-20	16-23
Snout to anus	37 mm.	48 mm.	44 mm.

The keeling, quite apart from other characters, distinguishes *barbouri* from *homocolepis*, *ophiolepis*, *isolepis* and the so-called *Bunocnemis modestus*.



H. t. tropidolepis
Dorsal lepidosis of
Type from Somaliland
(after Angel, 1925)

H. t. squamulatus
Dorsal lepidosis of
Type of *alluaudi*
from Kenya Colony
(after Angel, 1925)

H. t. barbouri
Dorsal lepidosis of
Type from Kenya
Colony
(M. C. Z. 40907—♀)

Description. (Figures in parenthesis are those of the sixteen paratypes, though in none of them does *barbouri* differ from *tropidolepis* or *squamulatus*, the latter including *wernerii*, *tornieri* and *alluaudi*).

Nostril bordered by the rostral, first labial, and (3-) 4 small nasals, the uppermost in contact with its fellow (or separated by a single granule in M. C. Z. 47320 only); upper labials 7-8 (6 in three paratypes, see fig. 1 in Andersson); lower labials 6-7 (5 in two paratypes); digits moderately dilated, inferiorly with oblique lamellae, 5 (4-6) under the first toe, 7 (6-8) under the fourth toe (see fig. 2 in Andersson; owing to

the gradual diminution in size of enlarged lamellar-like shields, counting becomes somewhat arbitrary and on some individuals might be reckoned up to 10 or 11).

Back covered with heterogeneous, imbricate scales, the largest of which are feebly keeled; tail covered above and below by smooth, imbricate scales, of which the median subcaudal series are transversely enlarged, resembling the ventrals of ophidia. (Males with 16-23 preano-femoral pores).

Measurements. Total length of type ♀, 84 (44 + 40) mm., largest paratype ♂, 70⁺ (38 + 32⁺) mm., the tail being regenerated.

Habitat. All were taken beneath the great piles of palm fronds assembled in the coconut plantations, the Siga series within a hundred yards of my tent, those from opposite Kilindini within a mile of the ferry landing at Likoni.

HEMIDACTYLUS MABOUIA (Jonnés)

Gecko mabouia Moreau de Jonnés, 1818, Bull. Soc. Philom. Paris, p. 138: Antilles and adjacent mainland.

Hemidactylus tasmani Hewitt, 1932, Ann. Natal Mus., 7, p. 120: Gwelo, Southern Rhodesia.

1 (M. C. Z. 47318) Uvira, B. C. 7.iii.39.

2 (M. C. Z. 47307) Ujiji, T. T. 10.iii.39.

Eggs & 4 (M. C. Z. 47308) Kitaya, T. T. 25.iii.39.

2 (M. C. Z. 47309) Mikindani, T. T. 11.iv.39.

2 (M. C. Z. 47311) Nchingidi, T. T. 9.v.39.

1 (M. C. Z. 47312) Lindi, T. T. 1.vi.39.

1 (M. C. Z. 47313) Siga Caves, T. T. 25.vii.39.

Distribution. Common on the screening of Jinja Hotel, Uganda; seen also at Magrotto, T. T.

Native names. *Nangwagwa* (Kimawiha); the common Swahili name of *mjusi* (lizard) is used for this gecko by Wamakonde and Wayao.

Synonymy. *H. mabouia* has usually been described as having "round" or "conical" tubercles, and this has led Dr. Hewitt to conclude that his pair of Gwelo geckos with distinctly keeled tubercles are distinct. As a matter of fact the tubercles of our extensive Antillean material frequently exhibit well defined keels and striae and neither Mr. Shreve nor I can distinguish between this topotypic material and our Southern Rhodesian (Birchenough Bridge, Sabi River) specimens in this character which shows considerable variation throughout its range. The fact that *tasmani* has 8 subdigital lamellae beneath its

median toe, together with its large size of 142 (69 + 73) mm., preclude the possibility of its being identified with the so closely allied *gardineri*.

Measurements. Largest ♂ (M. C. Z. 47311) measures 83 mm. from snout to anus; tail regenerated.

Breeding. On March 3, at Kitaya, three pairs of eggs, measuring 11 mm. in diameter, were taken in grass and under a collapsed hut; others at Mikindani on March 23.

Enemies. Adult, with tail intact, recovered from the stomach of a half-grown house snake (*Boaedon l. lineatus*) at Kitaya; one from a spotted wood snake (*Philothamnus s. semivariegatus*) at Kitaya, and one from a white-lipped snake (*Crotaphopeltis h. hotamboeia*) at Ujiji.

Habitat. The huge male was sunning on a forest tree in an overgrown clearing of the Rondo Plateau forest, far from the haunts of man! These clearings, however, were made by natives who fled up to the plateau during the war of 1914-1918. They were removed in the interests of forest conservation about 1920. The geckos were doubtless introduced in bundles of thatching material. Ujiji specimens were taken in abandoned tannery or refinery vats.

HEMIDACTYLUS GARDINERI Boulenger

Hemidactylus gardineri Boulenger, 1909, Trans. Linn. Soc. London (2), **12**, p. 296, pl. xl, fig. 4: Farquhar Island, Seychelle Islands.

Hemidactylus persimilis Barbour & Loveridge, 1928, Mem. Mus. Comp. Zoöl., **50**, p. 140, pl. iv, figs. 1 and 3: Dar es Salaam, Tanganyika Territory.

Hemidactylus mandanus Loveridge, 1936, Proc. Biol. Soc. Washington, **49**, p. 60: Kitau, Manda Island, Kenya Colony.

1 (M. C. Z. 47310) Mbanja near Lindi, T. T. 1.v.39.

1 (M. C. Z. 47319) Nchingidi, Rondo, T. T. 9.v.39.

5 (M. C. Z. 47314) Siga Caves, Tanga, T. T. 13.vi.39.

6 (M. C. Z. 47315) Amboni Estate, T. T. 19.vi.39.

4 (M. C. Z. 47316) Tanga, T. T. 22.vii.39.

1 (M. C. Z. 47317) Opp. Kilindini, K. C. 25.vii.39.

Synonymy. *H. gardineri* has never before been recorded from the African mainland; indeed, except for Boulenger (1911d) noting its occurrence in five localities of the Aldabra Islands, it has not appeared in the literature, being omitted by Parker (1936b) from his revised list of the Seychellois herpetofauna. When Barbour and I described *persimilis* we discussed the possibility of its identity with *gardineri*, but with no specimen of the latter available, we ruled it out as improbable.

Since then we obtained by exchange a ♀ cotype (M. C. Z. 28652), and from the Berlin Museum one of the Seychelle geckos referred by Peters (1869a) to *maculatus*. This specimen is specifically identical with *gardineri* and is not *maculatus* Duméril & Bibron as now restricted to their Indian material. The types of *persimilis* and *mandanus* have also been compared with the cotype of *gardineri* and found to be indistinguishable, for the minor differences displayed by *mandanus* are within the range of variation displayed by fifty specimens from nineteen localities which have been individually examined for the purpose of a revision of the family.

Breeding. On March 23, at Mikindani, several eggs measuring 8 x 7 mm., presumably of this species, were found under palm fronds.

Habitat. The series (M. C. Z. 47314-7), like the young geckos, with tails conspicuously barred black and white on a pinkish ground, from Lamu and Mombasa Islands captured in 1934, were taken, without exception, from beneath piles of fronds of the coconut palm. When such piles were in the vicinity of a palm, each gecko, as soon as disturbed, would make a dash for the nearest trunk, dart round to its further side and so upwards to safety.

Enemies. One was recovered from the stomach of a spotted wood snake (*Philothamnus s. semivariiegatus*) at Mbanja, another from a smooth snake (*Meizodon semiornata*) at Amboni, near Tanga.

LYGODACTYLUS GROTEI GROTEI Sternfeld

Lygodactylus grottei Sternfeld, 1911, Sitz. Ges. Naturf. Freunde Berlin, p. 245: Mikindani, Lindi Province, Tanganyika Territory.

2 (M. C. Z. 47329) Ujiji, T. T. 11.iii.39.

11 (M. C. Z. 47330) Kitaya, T. T. 15.iii.39.

3 (M. C. Z. 47331) Mbanja, T. T. 29.iv.39.

22 (M. C. Z. 47332-3) Mikindani, T. T. iv.39.

Native names. Those applied to *L. p. picturatus* with which it occurs in the last three localities, as well as at Lindi.

Variation. Upper labials 6-9; lower labials 6-8; 4 pairs of lamellae under fourth toe; median subcaudals transversely enlarged except in one (M. C. Z. 47329) of the Ujiji geckos where a few pairs of scales occur in the transversely enlarged series, *i.e.* it is approaching the condition of *capensis*.

Coloration in life. ♂. Ujiji. Above, dark brown, a pale, black-edged light streak from nostril passes over upper part of eye and

along flank (where it becomes pinkish brown) to base of tail; crown of head pale, vermiculated with black; back with a scarcely distinguishable light vertebral line; limbs and tail with light mottling. Below, throat pure white; chest and belly cream color; tail pinkish. In young the tails are distinctly reddish.

Measurements. Largest ♂ (M. C. Z. 47329) measures 71 (31 + 40) mm., largest ♀ (M. C. Z. 47333) measures 61 (29 + 32) mm.

Breeding. On March 23, at Mikindani, a pair of eggs measuring about 6.5 x 5 mm., were preserved. On March 25, at Kitaya, several pairs measuring about 5.5 x 5 mm. were found beneath (1) fallen thatch of collapsed hut, (2) bundles of grass assembled for thatching, (3) piles of weeds.

Parasites. Bright red acarines present on Ujiji geckos.

Enemies. Eleven were recovered from stomachs of five spotted wood snakes (*Philothamnus s. semivariegatus*) at Ujiji, Mbanja, and Mikindani, of these six were in one snake from the last locality.

Habits. Adults occasionally squeak when captured. At Lindi one was seen on the same tree with a *L. p. picturatus*.

Habitat. The topotypic series were mostly taken when basking on the trunks of coconut palms about my tent. At Kitaya pawpaw trees were favoured. Towards evening these geckos were frequently disturbed among rubbish piled about the base of trees, up whose trunks they would dart; it would appear as if they passed the night in the rubbish if the trees offered no refuge such as holes or deep fissures.

LYGODACTYLUS PICTURATUS GUTTURALIS (Bocage)

Hemidactylus gutturalis Bocage, 1873, Journ. Sci. Lisboa, 4, p. 211: Bissao, Portuguese Guinea.

1 (M. C. Z. 47340) Budongo Forest edge, U. 1.xii.38.

1 (M. C. Z. 47341) Bundibugyo, Uamba, U. 23.xii.38.

2 (M. C. Z. 47342) Ujiji, T. T. 12.iii.39.

Native name. *Abagwakulu* (Luamba).

Variation. Upper labials 6-7; lower labials 6-6; 5 pairs of lamellae under fourth toe; median subcaudals transversely enlarged.

Measurements. Largest ♂ (Ujiji) measures 80 (41 + 39) mm.

Enemies. Recovered from stomachs of spotted wood snakes (*Philothamnus s. semivariegatus*) at Katwe and Budongo.

LYGODACTYLUS PICTURATUS MOMBASICUS Loveridge

Lygodactylus picturatus mombasicus Loveridge, 1935, Proc. Biol. Soc. Washington, 48, p. 198: Kilindini, Mombasa Id., Kenya Colony.

2 (M. C. Z. 47339) Tanga, T. T. 22.vii.39.

Variation. Upper labials 7-8; lower labials 7-8; 6 pairs of lamellae under fourth toe; median subcaudals transversely enlarged.

Measurements. The adult ♂ measures 76 (38 + 38) mm., and is an undoubted example of this race which occurs together with the typical form in the Voi-Mombasa-Tanga triangle.

LYGODACTYLUS PICTURATUS PICTURATUS (Peters)

Hemidactylus picturatus Peters, 1870, Monatsb. Akad. Wiss. Berlin, p. 115, n.n. for *variegatus* Peters, preoccupied: Zanzibar.

1 (M. C. Z. 47334) Kitaya, T. T. 25.iii.39.

4 (M. C. Z. 47335-6) Mikindani, T. T. 23.iii.39.

Embryo & 1 (M. C. Z. 47337) Siga Caves, T. T. 10.vi.39.

3 (M. C. Z. 47338) Amboni Estate, T. T. 19.vi.39.

Seen also at Lindi on the same tree as a *Lygodactylus g. grotei*.

Native names. *Nankwakwa* (Kiyao); *nangwagwa* (Kimahiwa); *kihetupetu* (Kimakonde). But all three applied also to *L. g. grotei*.

Variation. Upper labials 6-8; lower labials 6-8; 6 pairs of lamellae under fourth toe; median subcaudals transversely enlarged.

Measurements. Largest ♂♂ (Mikindani) each measured 43 mm. from snout to anus; tails reproduced. The large size attained in this region being reflected in the egg dimensions.

Breeding. On June 10, at Siga, an egg, containing embryo, preserved.

Enemies. Three recovered from the stomach of a hawk (*Accipiter b. polyzonoides*) shot in palm at sunset, one in another (*Accipiter m. tropicalis*) shot in palm at noon, both at Mikindani.

AGAMIDAE

AGAMA MOSSAMBICA MOSSAMBICA Peters

Agama mossambica Peters, 1854, Monatsb. Akad. Wiss. Berlin, p. 616: Coastal Province, Mozambique.

12 (M. C. Z. 47358-9) Kitaya, T. T. 25-31.iii.39.

6 (M. C. Z. 47360-1) Mikindani, T. T. 11.iv.39.

2 (M. C. Z. 47362) Mbanja, T. T. 27.iv.39.

3 (M. C. Z. 47363) Nchingidi, T. T. 13.v.39.

1 (M. C. Z. 47364) Lindi, T. T. 2.vi.39.

Native names. *Nampopo* (Kiyao); *nankandindumba* (Kimakonde at Kitaya); *nangwangula* (Kimakonde at Mikindani and Mbanja); *li-wangula* (Kimawiha).

Variation. Midbody scale-rows 74-80; preanal pores 23-26.

Coloration. In life. ♂. Above, crown (sometimes also occiput and sides of head) olive; occiput and sides of head mottled with pale blue and white; back, limbs, and tail, pale olive tending to very pale blue along the vertebral line. Below, chin and throat anteriorly blue, dewlap black; remaining undersurfaces pale bronzy olive to white.

♀. Above, as male, but with a chain of broad, blood-red markings along the dorso-lateral region sometimes uniting on the vertebral line with the corresponding series on the other side.

Young ♀. Above, crown black, occipital scale pale blue, parietal region and sides of head bright ultramarine blue, circumorbital region pale buff as is also the vertebral line and a dorso-lateral line which unites with the vertebral line and its fellow by a series of saddle-like sepia markings; these are continued on to the tail as a series of dark blotches or bands which become fainter posteriorly; upper parts otherwise plumbeous. Below, throat faintly white, almost obscured by a network of dark and light blue, base of throat with a black patch; chest, belly, limbs, and tail cream colored.

The adults described above came from Kitaya, the young from Mikindani.

Measurements. Largest ♂ (Kitaya) measures 310 (120 + 190) mm., largest ♀ ♀ (Kitaya) measure 259 (99 + 160) mm., smallest (Nchingidi) measures 84 (34 + 50) mm.

Breeding. Between March 25-31, at Kitaya, all four females were gravid, the 6 (?) or 8 eggs measuring about 18 x 10 mm. in three examined. At this same time the largest male was shot while chasing another from his tree. At Mbanja and Nchingidi only very young agamas were seen, so that subspecific determination is only assumed.

Diet. Stomachs held: (1) Ants; (2) ants; (3) ants; (4) ants and big beetle; (5) ants; grasshopper; (6) ants; beetles; grasshoppers; chrysid bee; millipede; (7) ants; beetle larva; termite; millipede.

Parasites. At Kitaya and Mikindani almost all adults were heavily infested by acarines beneath the ventral scales; at Kitaya a single small ♀ nematode (*Abbreviata* sp.) was present in a stomach full of big black ants.

AGAMA MOSSAMBICA MONTANA Barbour & Loveridge

Agama mossambica montana Barbour & Loveridge, 1928, Mem. Mus. Comp. Zool., 50, p. 147: Below Bagilo, Uluguru Mountains, Tanganyika Territory.

7 (M. C. Z. 47365-6) Magrotto Mtn., T. T. 1.vii.39.

Native name. *Kokolwe* (Kisambara).

Variation. It is interesting to come straight from collecting the larger coastal form to the mountains where this differently colored dwarf race occurs, the males with only 12-14 preanal pores. Six of the series are adult, or subadult, males.

Measurements. Largest ♂ (M. C. Z. 47365) measures 259 (86 + 173) mm., only ♀ measures 237 (87 + 150) mm., and is gravid.

AGAMA ATRICOLLIS Smith

Agama atricollis A. Smith, 1849, Illus. Zool. S. Africa, Rept., App., p. 14: Natal, South Africa.

8 (M. C. Z. 47343-4) Mabira Forest, U. 7.xi.38.

11 (M. C. Z. 47345-6) Budongo Forest, U. 23.xi.38.

4 (M. C. Z. 47347-8) Kibale Forest, U. 9.xii.38.

3 (M. C. Z. 47349-50) Bundibugyo, U. 21.xii.38.

6 (M. C. Z. 47351-2) Bugoye, U. 27.xii.38.

1 (M. C. Z. 47353) Nyakabande, U. 26.i.39.

1 (M. C. Z. 47354) Mushongero, U. 1.ii.39.

2 (M. C. Z. 47355) Kisenyi, B. R. 12.ii.39.

13 (M. C. Z. 47356-7) Idjwi Id., B. C. 22-28.ii.39.

Native names. *Konkome* (Luganda, Lutoro, Luwamba); *chihangara* (Lukiga); *buruburu* (Lulega).

Variation. Twenty males possess two, occasionally three, rows of preanal pores, apparently increasing with age, ranging from 15-30, average 22.

Color in life. Considerable difference as between Uganda and Congo males was noted, and recorded as follows: (Budongo). Above, head, anteriorly and on cheeks, turquoise blue; posteriorly, whole of back, sides, limbs, and middle third of tail, cobalt blue; anterior third of tail, olive, posterior third dark brown or black. Below, throat a mixture of turquoise and cobalt blue; yellow spots on cheeks and nape; a black patch in front of forelimbs which are blackish; chest

cobalt blue; belly buff mottled with black; anterior third of tail buffish white, median third tinged with cobalt, posterior third dark.

♂ (Idjwi). Above, head and cheeks turquoise blue; back and limbs yellow green; centre of flanks with a large patch of cobalt blue which reaches upwards towards vertebral line; base of tail slightly tinged with orange, followed by a band (40 mm. in width) of grayish brown, followed by a band (40 mm. in width) of pale blue, the remaining 40 mm. of tail grayish brown like the upper surface of hands and feet. Below, chin bright cobalt blue, centre of throat greenish flecked with yellow, base of throat black; chest, abdomen, and lower side of thighs, metallic old gold with patches of cobalt anteriorly and on sides and a black patch posteriorly; base of tail buff, followed by pale gray-brown and yellowish gray.

♀ (Idjwi). Above, head bluish, dark on crown, clearer on sides, circumorbital region and supraorbital ridge yellowish; nape blackish, the darker pigment extending midway along the back where it merges into pale bronze, a dorso-lateral chain of orange-red blotches; tail pale bronze with ill-defined black cross bands. Below, metallic pale bronze somewhat greener on chest.

Measurements. Largest ♂ (M. C. Z. 47343) measures 330 (120 + 210) mm., largest ♀ (M. C. Z. 47344) measures 263 (107 + 156) mm., smallest agama (Idjwi) measures 92 (40 + 52) mm.

Breeding. On November 7, at Mabira, embryos were discernible in the spherical, 8 mm. diameter eggs in a female! On February 23, on Idjwi, all three adult females were gravid, each holding 6 eggs measuring 10 x 17, 12 x 20, and 13 x 24 mm. respectively, while the last mentioned had a second series developing of about one-third the size.

Parasites. Nematodes (*Oochoristica* sp.) were present in several stomachs, and one, together with an immature ♀ trematode (*Strongyluris* sp.), was found in the peritoneum of a ♀ agama from Mabira; *Abbreviata britanica* recovered from a Budongo lizard.

Enemies. Recovered from the stomachs of two tree snakes (*Rhamnophis j. jacksoni* and *Thelotornis k. kirtlandii*) at Idjwi and Bundibugyo respectively.

Habitat. At Kisenyi, though one was taken on a palm trunk in town, many were seen on the lava road to the lava flow, as often on the ground as on shrubs!

ZONURIDAE

ZONURUS TROPIDOSTERNUM Cope

Zonurus tropidosternum Cope, 1869, Proc. Amer. Philos. Soc., **11**, p. 169: "Madagascar." (error).

♂ (M. C. Z. 47367) Nchingidi, T. T. 9.v.39.

Native name. *Chigologolo* (Kimwera).

Variation. Nasals form a suture, thus differing from the type (M. C. Z. 5742). Incidentally *Cordylus Laurenti* should probably be used in preference to *Zonurus*.

Measurements. Total length 170 (90 + 80) mm.

Habitat. Shot while basking outside its hole in a tree at the forest edge; a glowworm was in its mouth as it came tumbling down.

CHAMAESAURA TENUIOR Günther

Chamaesaura tenuior Günther, 1895, Ann. Mag. Nat. Hist. (6), **15**, p. 524; pl. xxi, fig. B: Kampala, Uganda.

♀ (M. C. Z. 47368) Fort Portal, U. 19.xii.38.

Native name. *Nyarunyansi* (Lutoro and Luamba).

Breeding. On December 12, this 138 mm. (snout to anus) ♀ held embryos.

VARANIDAE

VARANUS OCELLATUS Rüppell

Varanus ocellatus Rüppell, 1827, Atlas Reise nörd. Afrika, p. 21, pl. vi: Kordofan, Anglo-Egyptian Sudan.

Skull & 5 (M. C. Z. 47369-74) Mikindani, T. T. 15-21.iv.39.

Skull & skin (M. C. Z. 47375) Siga Caves, T. T. 12.vi.39.

Native names. *Liongondo* (Kimakonde); *ngondo* (Kimawiha).

Color in life. ♂ (Mikindani). Above, crown black, back and flanks blue-gray, three broad (*i.e.* 3-4 scales wide) black lines on nape, the median forked anteriorly and posteriorly so as to surround two large light ocelli, each of which has three black scales in its centre, these form the first of seven transverse rows of similar ocelli, the intermediate rows being composed of small, less well-defined, light spots, with or without black scales, the intervening area is covered by a

heavy black network which almost obscures the ground color; limbs black, spotted with yellow, such spots being usually formed of groups of three yellow scales; tail black with thirteen alternating broad and narrow, light (yellowish to bluish) crossbands speckled with black. Below, lower jaw blue-gray; throat olivaceous with obsolescent dark spots; soles of feet brown, the centre of each scale often black; rest of undersurfaces yellowish or white with a blue-gray network.

Young ♂ (Mikindani). Circumnasal area, limbs anteriorly, and throat, greenish, otherwise like adult, but the blue-gray ground color much more distinct so rendering the black network more conspicuous; spots clear white; bars on tail less well-defined.

Measurements. Largest ♂ (M. C. Z. 47375) measures 1500 + (700 + 800 + tip of tail) mm., *i.e.* 4' 9½"; weight 13 lbs.; skull length 135 mm. Another ♂ (M. C. Z. 47370) measures 1440 + (620 + 820 + tip of tail) mm., *i.e.* 4' 8" (2' + 2' 8").

Breeding. On April 21, at Mikindani, a ♀ held numerous small ova 14 mm. in diameter.

Diet. Her stomach held a large slug and five snails (*Achatina* sp.), that of a Mikindani male, two giant crickets (*Brachytrypetes membranaceus*).

Parasites. Ticks and nematodes on, and in, last monitor.

Enemies. At Mikindani some Yao showed me a big male (skull is M. C. Z. 47369) which they were about to eat. Fortunately the poor beast, lashed to a pole, was dead, for they had severed each foot at the base, being afraid, so they said, of its claws.

Habitat. These big lizards are distressingly tough. One, which I shot as it was basking high in a coconut palm, though mortally wounded, made a dash for the burlap-like fibre about the stem and hid there till fetched down by my gunbearer.

The Siga male was basking on the branch of a wild fig at a height of sixty feet from the ground. Except that its head sank slowly to the branch, it never moved when I shot it with No. 3 from a twelve gauge. Two hours later, having in the meantime returned to camp for a 120 ft. rope, I climbed a cliff and, after the fifth attempt, succeeded in throwing a stone, attached to the rope, over the limb and eventually beneath the monitor's chin. Each time that the rope was pulled the reptile's head waggled to and fro lifelessly. Suddenly, to our amazement, the tail wriggled, the head was raised, the tongue flickered, and the almost five-foot lizard turned about on the broad limb. Quickly I gave it a charge of No. 8 from the .410, which brought it crashing down sixty feet. Even then it started to crawl away until I seized it by the tail.

VARANUS NILOTICUS (Linnaeus)

Lacerta nilotica Linnaeus, 1766, Syst. Nat., ed. 12, 1, p. 369: Egypt.

3 (M. C. Z. 47376) Mbanja, T. T. 28.iv.39.

1 (M. C. Z. 47377) Siga Caves, T. T. 14.vi.39.

1 (M. C. Z. 47378) Magrotto Mtn., T. T. 1.vii.39.

Native names. *Ngondo* (Kimakonde); *mbulu* (Kisambara).

Variation. In a young Mbanja monitor the nostril is only 1 mm. nearer the orbit than it is to the end of the snout.

Measurements. Largest (M. C. Z. 47377) measures 1170 (430 + 740) mm., i.e. 3' 8½", and weighed 4½ lbs.

Habitat. The three young Mbanja lizards were shot in shrubs bordering a stream, the Magrotto monitor in a tree at edge of rain forest, it dropped from the tree and plunged into a stream, then swam under water to a hole in the bank which it entered.

AMPHISBAENIDAE

As all pertinent information regarding the amphisbaenids collected during the course of the expedition has been incorporated in my recent revision of the African members of this family (Bull. Mus. Comp. Zoöl., 87, pp. 353-451, figs. 1-53), they need be only listed here.

AMPHISBAENA PHYLOFINIENS Tornier

Amphisbaena phylofiniens Tornier. 1899, Zool. Anz., 22, p. 260: Ujiji, Tanganyika Territory.

4 (M. C. Z. 47901-4) Ruanda, Ujiji, T. T. 11-15.iv.39.

AMPHISBAENA ORIENTALIS (Sternfeld)

Amphisbaenula orientalis Sternfeld, 1911, Sitz. Ges. Naturf. Freunde Berlin, p. 246: Mikindani, Tanganyika Territory.

1 (M. C. Z. 47905) Mikindani, T. T. 24.iv.39.

AMPHISBAENA EWERBECKI (Werner)

Chirindia ewerbecki Werner, 1910 (1909), Mitt. Zool. Nat. Mus. Hamburg, 27, p. 37: Mbanja (Banja), Tanganyika Territory.

70 (M. C. Z. 47906-49) Mbanja, T. T. 26-30.iv.39.

1 (M. C. Z. 47950) Lindi, s.e. T. T. 1.vi.39.

AMPHISBAENA RONDOENSIS Loveridge

Amphisbaena rondoensis Loveridge, 1940, Bull. Mus. Comp. Zoöl., 87, p. 394
fig. 23: Nchingidi, Rondo Plateau, Tanganyika Territory.

49 (M. C. Z. 47951-99) Nchingidi, T. T. 9-19.v.39.

These are the Type and Paratypes of a form which would be referred to the genus *Chirindia* if grounds for its revival should be forthcoming. The series showed no overlapping with the seventy topotypes of its nearest ally, *everbecki*, occurring in low-lying country fifty miles to the north.

LACERTIDAE

NUCRAS BOULENGERI KILOSAE Loveridge

Nucras kilosae Loveridge, 1922, Proc. Zool. Soc. London, p. 314: Kilosa, Usagara, Tanganyika Territory.

3 (M. C. Z. 47379-80) Nchingidi, T. T. 13.v.39.

Variation. It is interesting to note that the keels were not noticeable on these very young specimens unless dry; their scale-counts fall within the range of this race though the record involves a southeastward extension of the range nearly 300 miles.

Color in life. Above and on sides, black, a cream stripe from rostral to frontal, latter, as well as some other head scales, edged with creamy white; upper lip and sides handsomely spotted with white; a vertebral and two slightly narrower, light, dorso-lateral lines tinged with salmon; tail translucent pink with a broad, black, median, longitudinal line on the base and two ill-defined ones on the sides. Below, chin, throat, breast, abdomen, and fore limbs, white; hind limbs and tail pink.

Habitat. Taken on sandy paths in eroded areas of the forest.

LACERTA VERSUS ALGIROIDES

Though the genotypes of these two groups are distinct enough, some of the intermediate forms are not so readily distinguishable. *Lacerta jacksoni*, as stated by Tornier, appears closely related to *vaucreselli* in the moderate size and keeling of the dorsal scales which are juxtaposed or subimbricate in *jacksoni*, slightly imbricate in *vaucreselli*; in fact, the quickest way to distinguish the two, apart from the lower femoral pore counts of the latter, is in the presence in preserved specimens of *jacksoni* of a white background to the femoral pores and cir-

cumanal areas which are uniform in *vauereselli*. The transference of the latter to *Algiroides*, makes necessary the following amendment to the key to those genera as presented by Boulenger (1920, Monogr. Lacertidae, 1, p. 2), viz.

Dorsal scales small or moderate, smooth or strongly keeled, juxtaposed or subimbricate. *Lacerta*
 Dorsal scales moderate or large, strongly keeled, imbricate. . . *Algiroides*

LACERTA JACKSONI Boulenger

Lacerta jacksoni Boulenger, 1899, Proc. Zool. Soc. London, p. 96, pl. x: Ravine Station, 7500 feet, Mau Mountains, Kenya Colony.

1 (M. C. Z. 47381) Nyakabande, U. 29.i.39.

1 (M. C. Z. 47382) Mushongero, U. 30.i.39.

2 (M. C. Z. 47383-4) Kisenyi, B. R. 10.ii.39.

85 (M. C. Z. 47385-94) Idjwi Id., B. C. 13-28.ii.39.

Native names. *Ngondochoero* (Lukiga); *kavunduguru* (Lulega).

Variation. Femoral pores 14-19, the former number on 9 sides only, the latter only on 1 side (M. C. Z. 47383), 15-17 being normal with an average of 16.6 pores for 159 sides (the 160th side being damaged).

Coloration. ♂ (Kisenyi). Above, brown, marbled with black on dorsum and tail and with more or less longitudinal series of cream-colored spots, each consisting of one or two scales; sides spotted with cream and pale blue. Below, lower labials, like the upper, spotted with black; throat to collar white; chest and belly yellowish white; limbs bright yellow; tail white.

Measurements. Largest ♂ (M. C. Z. 47385) measures 231 (83 + 148) mm., but half-a-dozen others are 82 mm. from snout to anus; largest ♀ (M. C. Z. 47390) measures 187 (76 + 111) mm.

Breeding. On January 29, at Nyakabande, a ♀ held 3 eggs measuring 14 x 8 to 15 x 7 mm. Between February 13 and 28, on Idjwi Island, many ♀ ♀ were gravid, five (of 65-76 mm. head and body length) examined held from 3-5 eggs ranging from 11 x 9 to 15 x 9 mm., *i.e.* about ready for laying.

Dict. Stomachs held (1) two large crickets, (2) limbs of big spider.

Enemies. One recovered from stomach of a green snake (*Chlorophis irregularis*) on Idjwi.

Habitat. Where, as at Mushongero and Kisenyi, deforestation has occurred, it is interesting to observe the adaptability of this arboreal species which was living in holes in the earth bank of the terraced

roadway leading to Lake Mutanda; while at Kisenyi I captured two that were basking on the road but retreated into crevices between the blocks of lava which formed the foundation for the road down to Lake Kivu.

ALGIROIDES VAUERESELLI (Tornier)

Lacerta vauereselli Tornier, 1902, Zool. Anz., **25**, p. 701: Kagera, west of Lake Victoria, Tanganyika Territory.

Algiroides boulengeri Peracca, 1917, Atti Acc. Torin, **52**, p. 351: Fort Portal, Toro, Uganda.

16 (M. C. Z. 47395-404) Idjwi Id., B. C. 20-28.ii.39.

Native name. *Kavunduguru* (Lulega).

Synonymy. Though I have not seen types of either of the two species listed above. I am confident that the synonymizing of *boulengeri* is correct. Its type locality is only 120 miles north of that of *vauereselli*, taking the Kagera River at its nearest point. *L. vauereselli*, already recorded from Idjwi Island, has been considered a great rarity until now, so that it seems advisable to furnish the statistical data derived from this fine series in some detail.

Variation. Nasals separated (M. C. Z. 47395) or in contact (M. C. Z. 47396); upper labials anterior to subocular 3-5, normally 4; dorsal scales across midbody 35-43; gular scales from mental to collar 20-27; plates in collar 6-8; transverse rows of ventrals from collar to crotch 17-22; longitudinal rows of ventrals 6-8; femoral pores 8-12, average 9; lamellae beneath fourth toe 17-22; adpressed hind limb reaches axilla or shoulder in females, shoulder or collar in males.

Coloration. In life. Adult ♂. Above, head dark bronze; tip of snout and a broad dorsal band, light bronze; from nostril through eye and along flanks a broad, brown, lateral band, darker above; upper lip light-colored the coloring continued as a light line to insertion of fore limb; between fore and hind limbs are two rows of black-edged, cream-centered ocelli; on vertebral line, at least posteriorly, a chain of dark spots; tail flecked with darker brown. Below, metallic whitish gray (black in formalin).

Young—67 mm. Above, as adult, but end of snout greenish; dorsal band edged on either side by a row of cream-colored spots, those on the sides brighter, some tinged with green. Below, chin and throat, extending to upper lip, and tail, from a short distance behind anus, bright blue; rest of lower surface of body and limbs, bright grass-green.

Measurements. Largest ♂ (M. C. Z. 47400) measures 197 (62 + 135) mm., largest ♀ (M. C. Z. 47399) measures 171 (57 + 114) mm.

Breeding. Several ♀ ♀ gravid, one examined held 3 eggs measuring 8 x 6 mm.

Diet. A grasshopper in each of five stomachs examined.

Enemies. One recovered from the stomach of a wolf snake (*Lycophidion c. ornatum*).

ALGIROIDES AFRICANUS Boulenger

Algiroides africanus Boulenger, 1906, Proc. Zool. Soc. London, 2, p. 570, fig. 96: Entebbe, Uganda.

2 (M. C. Z. 47405-6) Mabira Forest, U. 10-16.xi.38.

8 (M. C. Z. 47407-12) Budongo Forest, U. 29-30.xi.38.

1 (M. C. Z. 47413) Kibale Forest, U. 9.xii.38.

2 (M. C. Z. 47414-5) Idjwi Id., B. C. 6.iii.39.

Native name. *Kalumbalunda* (Luganda).

Variation. Dorsal scales across midbody 20-24; plates in collar 6-9; transverse rows of ventrals from collar to crotch 18-22; longitudinal rows of ventrals 6; femoral pores 12-16; lamellae beneath fourth toe 17-22; adpressed hind limb reaches shoulder or collar in females, collar or beyond in males.

Coloration. In life. Budongo. Above, dark rufous brown with an irregular vertebral series of black spots; flanks and limbs sepia brown spotted with black; tail transversely barred with darker and lighter. Below, throat grayish with a metallic lustre; chest from collar, abdomen to basal portion of tail, bright green, rest of tail brown.

Measurements. Largest ♂ (M. C. Z. 47414) measures 167 (60 + 107) mm., largest ♀ measures 67 mm. in head and body length, tail missing.

Breeding. On November 16, at Mubango, ova small, about 6 x 5 mm.

Diet. Stomachs held: (1) Large spider, (2) spiders and egg packet, (3) orthopteran and very small insects, (4) black cricket, (5) cricket, (6) cricket.

Parasites. Two larval nematodes (Physalopteridae) in stomach of Mubango lizard.

Enemies. Recovered from stomachs of green snake (*Chlorophis hoplogaster*) and cobra (*Naja melanoleuca*) at Mubango, Mabira Forest.

Habitat. Most usually to be seen basking at whatever height the

sunlight happened to be striking the trunks of trees fringing the forest edge or clearing: frequently beside some knot hole or piece of loose bark, in, or beneath, which they could seek refuge when disturbed. Judging by their diet, much of their hunting is done on the ground, and a Mabira lizard was discovered beneath a pile of mulch in a banana plantation adjacent to the forest.

ICHNOTROPIS SQUAMULOSA Peters

Ichnotropis squamulosa Peters, 1854, Monatsb. Akad. Wiss. Berlin, p. 617: Tete, Mozambique.

♂ (M. C. Z. 47416) Kitaya, T. T. 2.iv.39.

Coloration. Differs from all our comparative material in that the entire under surface is black, perhaps this is correlated with the specimen being an adult breeding male, whose testes are much enlarged.

Diet. Two spiders and two young crickets.

Habitat. Shot on a sandy path through dry scrub, the two or three seen were exceedingly wary and the species unknown to the local natives — Konde and Yao, though it has been recorded already from the not far distant Konde Plateau.

EREMIAS SPEKII SPEKII Günther

Eremias spekii Günther, 1872, Ann. Mag. Nat. Hist. (4), 9, p. 381: Unyamwezi Tanganyika Territory.

3 (M. C. Z. 47417-9) Siga Caves, T. T. 8.vi.39.

Also seen on Amboni Estate, both localities being near Tanga.

Coloration. In life. Young — 80 (26 + 54) mm. Above, head brown, dorsum black, three slightly pinkish lines commencing behind parietals converge to form a single vertebral line which becomes pink on tail, a cream-colored dorso-lateral line commencing at orbit broadens and becomes pink on tail, a cream-colored lateral line from rostral, over labials, through tympanum, after which it breaks up into a series of dots and dashes on flank, but is continued (as dots) along the anterior surface of hind limb to the foot; both fore and hind limbs spotted. Below, white, except for tail, which is red.

HOLASPIS GUENTHERI Gray

Holaspis guentheri (A. Smith) Gray, 1863, Proc. Zool. Soc. London, p. 153, pl. xx, fig. 1: No type locality.

♂ (M. C. Z. 47420) Budongo Forest, U. 29.xi.38.

♂ ♂ (M. C. Z. 47421-2) Magrotto Mtn., T. T. 7.vii.39.

Native name. *Chungura* (Kisambara).

Color in life. ♂ (Budongo). Above, pale creamy green with black vertebral line bifurcating on nape and head; flanks with three black longitudinal lines; median line of tail pale blue edged with black and flanked with yellow. Below, throat and fore limbs grayish white tinged with pink; chest and belly bright orange extending on to the hind limbs which otherwise are yellow; anterior two-thirds of tail yellow transversely barred with black, posterior third pale blue but similarly barred with black.

The tails of the Magrotto males differed somewhat, that of the larger being yellow below, and of the smaller bright blue bordered by bright yellow, each segment with a pair of black spots.

Measurements. Largest (M. C. Z. 47420), apparently a record, measures 123 (53 + 70) mm

Diet. A moth in its stomach.

Parasites. Red acarine parasites on its flanks anteriorly, added to the appearance of this beautiful species.

Preserved in amber. Five years ago Dr. Thomas Barbour showed me a specimen of *Holaspis guentheri*, minus the posterior portion of its hind limbs and tail, which was embedded in a small block of amber-like substance. So well preserved was the specimen that one could count the 24 rows of dorsals at midbody, and the 31 or 32 gular scales between mental and medium collar plate. The femoral pores, however, were uncountable, nor was the precise position of the nostril clear. The lizard appears indistinguishable from the species which today ranges right across tropical Africa, in the west from Sierra Leone to Angola, in the east from the Usambara Mountains to Nyasaland.

The specimen had been found in a desk drawer of the late Director of the Museum of Comparative Zoölogy, Mr. Samuel Henshaw, and unfortunately bore no label. Mr. Henshaw, being approached regarding its history, stated that it was one of "two lizards in amber" which formed part of the collection of the late Dr. Hagen of Königsberg.

On hearing of the Königsberg association, my interest was aroused

because of the implications regarding the lizard allegedly embedded in Baltic amber in the Königsberg Museum. Fifty years ago this reptile was thought to be a *Cnemidophorus* by Boettger, but subsequently named *Nucras succinea* by Boulenger (1917, Ann. S. African Mus., 13, p. 195, footnote) on the basis of the description given by Klebs (1910, Schrift. Physik. Ges. Königsberg, 51, p. 217) who had shown him the lizard in 1891.

Dr. Frank M. Carpenter kindly identified two diptera which were embedded with the *Holaspis*, as *Phlebotomus* and *Trigona*, wide-ranging genera which shed no light on the place of origin. Then, becoming interested, Dr. Carpenter, together with Mr. F. J. Gettens, staff chemist of the Fogg Art Museum at Harvard, investigated the composition of the material and definitely demonstrated that it was not Baltic amber. This amber has a melting point of about 50° Cent. higher than that of any of the copals. They reached the conclusion that the melting point of this specimen was nearer to that of Congo copal than to the Zanzibar product.

In this connection it may be recalled that Peters (1865, Monatsb. Akad. Wiss. Berlin, pp. 455-457) discussed the presence of a gecko embedded in Zanzibar copal. It had formed one item in a collection of embedded animals and plants brought back by F. O'Swald after several years sojourn on the island. Peters referred the gecko to *Lygodactylus capensis* (A. Smith) which, with its synonym *strigatus* Gray, was the only member of the genus known at that time. It is probable, however, that it should be identified as the scarcely distinguishable *grotei* Sternfeld (1911) which is the common species of the adjacent coast and neighbouring islands.

This raises the question as to whether *Nucras succinea* is really embedded in Baltic Oligocene amber, and therefore "the oldest known Lacertid" as stated by Boulenger (1920, Monogr. Lacertidae, 1, p. 7). When he examined it in 1891, the genus was known only from south of the Zambesi, since then its range has been extended to equatorial East Africa, though not the Congo. It has not been recorded from Zanzibar but does occur on the adjacent mainland 150 miles due west of Zanzibar, where the form which I named *N. boulengeri kilosae* is found, a race which ranges from Kajiado, Kenya Colony, south to the Rondo Plateau, some fifty miles southwest of Lindi Bay, Tanganyika Territory.

Very little, if any, of what is known as "Zanzibar copal" came from the island itself; Capt. J. F. Elton, writing from Kisiju, Kwale District, a dozen miles south of Dar es Salaam, says: (1879, Travels and Re-

searches among the Lakes and Mountains of Eastern and Central Africa, p. 78) "Everywhere signs of copal diggings were visible. In fact we were passing through the main fields from which the Zanzibar market was once almost entirely supplied, and which still produce the valuable gum in considerable quantities."

Should it ever be proved that the embedding medium of *succinea* is Zanzibar copal, the name *succinea* might have to take precedence over that of *kilosae*. Unfortunately, according to Klebs, the specimen suffered so severely at the time of its examination that few of the characters once observable, can now be seen.

GERRHOSAURIDAE

GERRHOSAURUS NIGROLINEATUS NIGROLINEATUS Hallowell

Gerrhosaurus nigro-lineatus Hallowell, 1857, Proc. Acad. Nat. Sci. Philadelphia, p. 49: Gaboon.

Gerrhosaurus flavigularis forma *intermedia* Lönnberg, 1907, in Sjöstedt, Wiss. Ergebn. Schwed. Zool. Exped. Kilimandjaro, Meru . . . , No. 4, p. 7, pl. i, figs. 1a-b: Steppe near Lake Natron, Tanganyika Territory.

Gerrhosaurus nigrolineatus auritus FitzSimons, 1939a, Ann. Transvaal Mus., 20, p. 10: Kaapmuiden, eastern Transvaal.

3 (M. C. Z. 47423-5) Kitaya, T. T. 25.iii.39.

1 (M. C. Z. 47426) Mikindani, T. T. 18.iv.39.

2 (M. C. Z. 47427-8) Mbanja, T. T. 28.iv.39.

1 (M. C. Z. 47429) Nchingidi, T. T. 9.v.39.

2 (M. C. Z. 47430) Lindi, T. T. 2.vi.39.

Native names. *Ligondo* (Kiyao); *liwalawahi* (Kimakonde at Kitaya); *nangkwakata* (Kimakonde at Mbanja).

Synonymy. Reasons for reverting to the opinion that *nigrolineatus* of East Africa is inseparable from the typical form of West Africa, and also for referring *australis* to the synonymy, were recently furnished in a revision of the family (1942, Bull. Mus. Comp. Zoöl, 89, p. 511).

Variation. Dorsal scales transversely 22-26, average 24; supraciliaries 4, except for No. 47428 with 5; length from snout to hind edge of ear contained in that from snout to anus 3.25-4.33 times. The lower figures are those of emergent young.

Breeding. On March 25, at Kitaya, six eggs were found beneath a pile of rotting vegetation; on opening one egg I found an embryo so

small that I placed the remaining five in a tin of damp sand and grass. During the succeeding months the eggs were examined periodically, one egg which had dried up was discarded. On opening the tin on June 8 I found three lizards so recently emerged that the albumen upon them was still moist. I measured one of them and found it (M. C. Z. 47425) was 181 (56 + 125) mm., but after two years in preservative only 170 (53 + 117) mm. The remaining egg seemed to have swollen somewhat since first collected, it now measured 30 x 22 mm.

In anticipation of a long wait, I sat down with the egg lying on my palm. Almost immediately, however, there was a convulsive movement and a long slit appeared at one end of the parchment-like shell, about one minute later the little lizard's snout (up to and including the eyes) was thrust out, another minute elapsed and then the rest of the head appeared. For seven minutes thereafter nothing more occurred, then the forepart up to the hind legs crawled out, to be followed, a couple of minutes later, by the long tail. The little creature lay breathing heavily on my hand and offered no objection to being picked up and placed upon the table. Suddenly, with the unexpectedness which characterized most of its actions, and as if a fall of two and a half feet was of no account, it leaped to the ground and raced away with a fine turn of speed. I let it go. The whole emergence had taken place between 10.45 and 11.10 a.m.

Apparently there is a definite season for such hatching along the East Coast, for hatchlings, either 6 mm. smaller or larger than the dimensions given above, were taken on April 8, May 5, and June 6 (*loc. cit. supra*), while recently emerged young were seen on paths at Kiponda, Rondo Plateau, and in Amboni Estate, near Tanga, on May 8, and June 20, respectively. Moreover, ovules were small in an adult ♀ taken on June 2 at Lindi.

Diet. Stomach of this ♀ held grasshoppers, termites and an *Ennea* shell; that of a young lizard, grasshoppers.

Enemies. Both Mbanja hatchlings, and another (not preserved) from Amboni, were recovered from the stomach of two hawks (*Kaupifalco monogrammica*); one had been swallowed by a house snake (*Boaedon l. lineatus*) at Nchingidi, and two by wolf snakes (*Lycophidion c. capense*) at Mikindani and Amboni. At Kitaya a big adult was taken in a rat trap baited with meat which probably attracted insects.

SCINCIDAE

MABUYA MACULILABRIS MACULILABRIS (Gray)

Plate 4, fig. 2.

Euprepis maculilabris Gray, 1845, Cat. Lizards Brit. Mus., p. 114: West Africa.

Mabuia maculilabris var. *kwidjwiensis* Sternfeld, 1912, Wiss. Ergebn. Deut. Zentral-Afrika-Exped. 1907-1908, 4, p. 233: Kwidjwi Island, Lake Kivu, Belgian Congo.

2 (M. C. Z. 47431-2) Mabira Forest, U. 5.xi.38.

3 (M. C. Z. 47433-5) Budongo Forest, U. 20.xi.38.

1 (M. C. Z. 47436) Butiaba swamp, U. 5.xii.38.

1 (M. C. Z. 47437) Kibale Forest, U. 16.xii.38.

1 (M. C. Z. 47438) Bundibugyo, U. 26.xii.38.

64 (M. C. Z. 47451-500) Idjwi Id., B. C. 16-28.ii.39.

2 (M. C. Z. 47439-40) Ujiji, T. T. 13.iii.39.

2 (M. C. Z. 47405-6) Mikindani, T. T. 10.iv.39.

2 (M. C. Z. 47445) Amboni Estate, T. T. 19.vi.39.

4 (M. C. Z. 47601-4) Likoni, K. C. 25.vii.39.

Seen also at Kisenyi, B. R., and near Siga Caves, T. T.

Native names. *Munya* (Luganda); *kifumbatanjoka* (Lutoro); *kilamerembi* (Luamba); *sazi* (Lulega).

Variation. The disposition of skinks of this difficult group must remain somewhat unsatisfactory until such time as a thorough revision of the genus can be undertaken. The long series of topotypes of *kwidjwiensis* were secured in the hope that it might be possible to recognize the race; however, after taking a series of one thousand observations on the fifty catalogued specimens, no grounds were found for doing so. This Idjwi series furnished the following data:

Centre of nostril above first labial, rarely above the suture between rostral and first labial; postnasal not, or but rarely, in contact with the second labial; frontonasal in contact with the rostral (12 ex.) though more usually separated (38 ex.); frontonasal in contact with frontal (17 ex.), usually separated (33 ex.); interparietal subequal to, or larger than, the frontoparietals (40 ex.) sometimes definitely smaller (10 ex.); frontal separated from (40 ex.) or in contact with (10 ex.) first supraocular; supraoculars 4 (constant on both right and left); supraciliaries (one side only examined) 4 (1 ex.), 5 (46 ex.), or 6 (3 ex.); lobules on anterior border of ear-opening normally 3, rarely 1 or 2 or indistinguishable; nuchals obtusely carinate; dorsals with 5 (young) to 7 (adults) or very rarely 8, keels; midbody scale-rows 30

(11 ex.), 31 (5 ex.), 32 (28 ex.), 33 (3 ex.), or 34 (3 ex.); from 2 to 4 preanals slightly, sometimes scarcely appreciably, enlarged; the adpressed hind limb fails to meet or meets the fingers of the backward pressed fore limb in 14 females and 1 male (M. C. Z. 47496), the wrist or elbow in 30 males (all of which have the hemipenes extruded).

The data derived from the Uganda, Tanganyika, and Kenya material falls within this range except that some young have tricarinate dorsals, that midbody scale-rows number 32-34 in about equal proportions, and that the sexual dimorphism of limb length noted in Idjwi skinks is not so reliable in coastal material.

Coloration. On Idjwi one gained the impression that the skinks were consistently more handsome than elsewhere, particularly at the coast. However, the following color notes were made in the field.

Budongo Forest, ♂. Above, olive, with ill-defined longitudinal rows of black spots on dorsum with finer green flecks interspersed between them; lips yellow, the latter color continuing on towards ear where it changes to orange, then fades out on flank about midbody; tail spotted with black. Below, pale yellow, spotted with black on throat and tail; chest and belly slightly brighter yellow, immaculate.

Idjwi Id., ♂. Above, black flecked with pale green, or olive flecked with black and pale green. Below, throat and flanks blood-orange; chest, abdomen, and underside of limbs very pale yellow; soles of feet dusky; tail whitish, uniform or spotted with black and tinged with pink towards the tip. N.B. Young ♂ ♂ have throats which are white, spotted with black, like those of the females.

Idjwi Id., ♀. Above, dark olive or brown, uniform or flecked with black and usually also with pale green. Below, throat lemon yellow; rest of underparts pale greenish white, or else this coloring reversed, viz. throat white spotted with black, chest and abdomen bright yellow; soles of feet and underside of tail as in ♂ ♂.

Idjwi Id., young. Above, dark brown, a bar of sepia brown from eye along flank. Below, white, immaculate.

Ujiji. ♂. Above, substantially similar to those from Idjwi Id. as described above. Below, throat white, spotted with black; otherwise in agreement with the Idjwi skink.

Measurements. Largest Idjwi ♂ (M. C. Z. 47451) measures 282 (92 + 190) mm., largest ♀ (M. C. Z. 47480) 222 (94 + 128) mm., but tail regenerated; females appear to average slightly smaller than males. From elsewhere largest ♂ (M. C. Z. 47434) measures 250 (88 + 162) mm., and ♀ (M. C. Z. 47601) 212 (86 + 126) mm., but tail of latter, possibly that of former also, regenerated.

Breeding. In February, on Idjwi, and July, at Likoni, females were found with both small ova and large eggs; 6 of the latter from a Likoni skink, measured 10 x 15 mm.

Diets. Stomachs held: large spider; several ants; real wasps; parasitic wasp; plant bugs; small weevil; plant beetles; fly; moths; grasshoppers and a cockroach.

Parasites. Nematodes were present in one of the Likoni skinks.

Enemies. One recovered from the stomach of a *Lycophidion c. ornatum* on Idjwi, another from a *L. c. capense* at Amboni, near Tanga.

Habitat. On wall of house at Mubango, Mabira; beneath vegetational debris in a banana plantation at Ujiji; under piles of palm fronds and coconut husks at Likoni.

MABUYA MACULILABRIS COMORENSIS (Peters)

Euprepes comorensis Peters, 1854, Monatsb. Akad. Wiss. Berlin, p. 619: Anjuan, i.e. Johanna Island, Comoro Islands.

7 (M. C. Z. 47446-50) Magrotto Mtn., T. T. 3.vii.39.

Native name. *Ghondo* (Kisambara), but generic.

Variation. These skinks are subspecifically identical with the extensive series from the Usambara Mountains discussed by Barbour and Loveridge (1928, p. 156). They differ from typical *maculilabris* in having 34-36 midbody scale-rows, together with a more robust build and shorter tail.

Measurements. Largest ♂ (M. C. Z. 47447) measures 243 (90 + 153) mm.

Habitat. Not uncommon at forest-edge where they may be seen basking on tree-trunks, both vertical and fallen.

MABUYA MACULILABRIS BOULENGERI Sternfeld

Mabuia boulengeri Sternfeld, 1911, Sitz. Ges. Naturf. Freunde Berlin, p. 248: Makonde Plateau, Lindi Province, Tanganyika Territory.

1 (M. C. Z. 47441) Kitaya, T. T. 2.iii.39.

3 (M. C. Z. 47442-3) Mikindani, T. T. 21.iv.39.

1 (M. C. Z. 47444) Nchingidi, T. T. 18.v.39.

Native names. *Chengamawta* (Kiyao); *chipakamawta* (Kimakonde); *linyeranenda* (Kimawiha).

Variation. In 1928 I relegated *boulengeri* to the synonymy of *maculilabris*, now, after collecting the above series of both sexes and ages

from points around the type locality, I am prepared, though with some misgivings to recognize it. It appears to differ from typical *maculilabris* in having 4 supraciliaries as a constant feature, whereas in the typical form 4 occurs only as a very exceptional deviation from 5-6; it has a longer tail and much more uniform coloring. Midbody scale-rows 30 (3 ex.) or 32 (2 ex.), whereas the typical form on the East Coast has 32-34.

Coloration. ♀. Kitaya. Above, uniform brown; sutures of upper and lower labials black; a series of black dots from eye to ear; flanks paler than dorsum. Below, throat pure white; belly tinged with yellow; tail buffy white, the lateral borders of the scales edged with greenish black resulting in four, irregular, longitudinal lines (as in *megalura*).

Measurements. Largest ♂ (M. C. Z. 47442) measures 268 (76 + 192) mm., only ♀ (M. C. Z. 47441) 232 (84 + 148) mm., tail regenerated.

Sexual dimorphism. In males the toes of the adpressed hind limb overlap the fingers of the backward pressed fore limb, in the female they fail to meet.

Diet. One stomach held a large spider, two others a large cricket each.

Habitat. The female I found asleep on the frond of a doom palm at the edge of a swamp, she was at a height of about five feet from the ground. The three males from Mikindani were shot while basking on the trunks of three adjacent coconut palms, it is interesting to note that two typical *maculilabris* were obtained at Mikindani, also upon the stems of coconuts, eleven days before.

MABUYA PLANIFRONS (Peters)

Euprepes (Euprepis) planifrons Peters, 1878, Monatsb. Akad. Wiss. Berlin, p. 203, pl. ii, fig. 2: Teita, Kenya Colony.

4 (M. C. Z. 46707-9) Amboni Estate, T. T. 19.vi.39.

Variation. Midbody scale-rows 28; dorsals with 3-7 keels; supranasals in contact; prefrontals separated; supraoculars 4-4; supraciliaries 5-6.

Measurements. Larger ♂ (M. C. Z. 47609) measures 261 (111 + 150) mm., and larger ♀ (M. C. Z. 47607) 328 (116 + 212) mm.

Diet. One disgorged a very large grasshopper when caught.

Habitat. All were dislodged by a tractor from piled and rotting vegetation.

MABUYA MEGALURA (Peters)

Euprepes (Mabuia) megalura Peters, 1878, Monatsb. Akad. Wiss. Berlin, p. 204, pl. ii, fig. 4: Teita, Kenya Colony.

33 (M. C. Z. 47610-9) Idjwi Id., B. C. 18-28.ii.39.

Native name. *Kahirira* (Lulega).

Variation. Midbody scale-rows 24-26; dorsals very obtusely tricarinate, or (in old females) smooth; supranasals in contact (28 ex.), or separated (5 ex.); prefrontals in contact (5 ex.), or separated (28 ex.); supraoculars 4-4; supraciliaries 3-5.

In skinks of this species the exceptionally slender tail is more often regenerated than otherwise, nor are such regenerated tails readily recognized without magnification. Of the present series only six possess their original tails intact and in all of these the length of the tail is more than twice that of the head and body. Recently de Witte (1933m, p. 76) revived the name *massaianus* (Fischer, 1884) for some Congo skinks on the ground that their tails were not twice the length of the respective head-and-body length.

Measurements. Largest ♂ (M. C. Z. 47612) measures 199 (56 + 143) mm.; largest ♀ (M. C. Z. 47616) 215 (69 + 146) mm., but both are surpassed in head-and-body length by others of (♂) 61 mm. and (♀) 75 mm. respectively which have regenerated tails.

Breeding. In February all adult females appeared to be gravid, five examined held 4, 4, 6, 6, and 8 ova respectively. In all, except the first lot, were white, but well-formed, embryos.

Diet. Examination of ten stomachs revealed the following: 6 grasshoppers, 1 pigmy locust, 1 mantid, 2 crickets, 1 dragonfly (with an estimated wing spread of three inches), 1 leafhopper (Homoptera), 1 moth, 2 caterpillars, and 2 spiders. Mr. F. G. Werner, to whom I am indebted for the identifications, expressed surprise that so small a species of skink should be capable of overpowering prey so large as many of the orthoptera proved to be.

Parasites. Nematodes (Cosmocercidae) were present and preserved, also larval Spiruroidea which Dr. Lucker suggests are not parasitic on this skink but were introduced with arthropod prey.

Habitat. In the grass fringing the footpaths.

MABUYA VARIA VARIA (Peters)

Euprepes (Euprepis) varius Peters, 1867, Monatsb. Akad. Wiss. Berlin, p. 20:
Tete, Mozambique.

♀ (M. C. Z. 47620) S. Kinangop, K. C. 27.x.38.

♂ (M. C. Z. 47621) Ujiji, T. T. 13.iii.39.

♀ (M. C. Z. 47622) Kitaya, T. T. 3.iv.39.

♂ ♀ (M. C. Z. 47623) Mikindani, T. T. 18.iv.39.

♀ (M. C. Z. 47624) Mbanja, T. T. 27.iv.39.

Seen also at Lindi and on Nchingidi Plateau.

Native names. *Jagasi* (Kikuyu); *namkwakwa* (Kiyao); *liwalawahi namahonta* (Kimakonde at Kitaya); *mjusi islam* (Kimakonde at Mbanja). The Konde and Yao names are not specific, however.

Variation. Midbody scale-rows 32-34; dorsals tricarinate; supranasals in contact; prefrontals separated; supraoculars 4-4; supra-ciliaries 4-5.

Measurements. Not exceptional.

Breeding. All four females are gravid, and in only the Kinangop skink do the ova not contain embryos.

Enemies. One recovered from the stomach of a hawk (*Kaupifalco monogrammica*) at Mbanja, two others from wolf snakes (*Lycophidion c. capense*) at Mbanja and Lindi, while a third was chased past my feet by a sand snake (*Psammodphis s. sibilans*) as recorded under that species.

MABUYA STRIATA (Peters)

Tropidolepisma striatum Peters, 1844, Monatsb. Akad. Wiss. Berlin, p. 36:
Mozambique.

♂ (M. C. Z. 47625) Mabira Forest, U. 5.xi.38.

♀ (M. C. Z. 47626) Budongo Forest, U. 5.xii.38.

♀ (M. C. Z. 47627) Bundibugyo, U. 21.xii.38.

♂ (M. C. Z. 47628) Mihunga Ridge, U. 17.i.39.

♂ (M. C. Z. 47629) Nyakabande, U. 27.i.39.

♂ (M. C. Z. 47630) Bugoie, B. R. 8.ii.39.

3 (M. C. Z. 47631) Kisenyi, B. R. 10.ii.39.

8 (M. C. Z. 47632-5) Idjwi Id., B. C. 16.ii.39.

♂ (M. C. Z. 47636) Kitaya, T. T. 28.iii.39.

♂ ♀ (M. C. Z. 47637-8) Mikindani, T. T. 18.iv.39.

♂ ♀ (M. C. Z. 47639-40) Nchingidi, T. T. 10.v.39.

See also at Ujiji, Lindi, Siga, Amboni, and on Magrotto Mtn.

Native names. *Munya* (Luganda and Lutoro); *kistumbu* (Luamba); *macherevera* (Lulega); *liwalawahi namahonta* (Kimakonde); *namkwakwa* (Kiyao); *nangwagwa* (Kimawiha); *ghondo* (Kisambara).

Variation. Midbody scale-rows 34-38; dorsals with 3-5-7 keels of which the median 3 only are prominent; supranasals in contact and prefrontals separated except in two (Idjwi and Nchingidi) skinks; supraoculars 4-4; supraciliaries 2-6.

Measurements. Largest ♂ (M. C. Z. 47636) measures 252 (97 + 155) mm., largest ♀ (M. C. Z. 47638) 200 (97 + 103) mm., but tail of latter regenerated.

Dict. Lygaeus bug, golden chrysomelid beetle, and grasshopper.

Enemies. One recovered from the stomach of a wolf snake (*Lycophidion e. capense*) at Uji.

Parasites. On Idjwi Island even very young skinks harboured large nematodes (Cosmocercidae) in stomach and intestines.

Habitat. On house in Mabira; rare at Budongo; common only in vicinity of native huts on Mihunga; in garden rubbish and on tree at Kisenyi; one shot twelve feet up a hardwood tree at Kitaya, while at Nchingidi two were shot when basking on tree trunks at a height of twenty feet from the ground. These trees were in forest clearings which had been made by refugee natives during the World War and subsequently abandoned on orders from the Forestry Department.

It was interesting to note the adaptability of this essentially savanna species which is accompanying man in his incursions into primary forest.

RIOPA FERNANDI (Burton)

Tiliqua fernandi Burton, 1836, Proc. Zool. Soc. London, p. 62; Fernando Po.

♀ ♀ (M. C. Z. 47641-2) Budongo Forest, U. 24.xi.38.

♂ (M. C. Z. 47643) Bundibugyo, U. 21.xii.38.

Native names. Ngurukisi (Lutoro); korukutendi (Luamba).

Variation. Midbody scale-rows 34-35, and in other respects entirely typical.

Measurements. The ♂ measures 226 (116 + 110) mm., the larger ♀, 261 (138 + 123) mm.

Breeding. Ova small in both these large females, testes large in the male.

Dict. Orthoptera in one, stomachs of the others empty.

Parasites. Female nematodes (Ascaridoidea, probably Cosmocercidae) present in Bundibugyo skink.

Defence. One, which I caught beneath a log, threatened to bite but made no sound either then or later in camp when it was provoked.

RIOPA SUNDEVALLII (Smith)

Eumices (Riopa) sunderallii (sic) A. Smith, 1849, Ill. Zool. S. Rept., App., p. 11: Natal, South Africa.

- 1 (M. C. Z. 47644) Butiaba swamp, U. 5.xii.38.
- 1 (M. C. Z. 47645) Mikindani, T. T. 14.iv.39.
- 2 (M. C. Z. 47646) Mbanja, T. T. 1.v.39.
- 6 (M. C. Z. 47647) Nchingidi, T. T. 13.v.39.
- 1 (M. C. Z. 47648) Siga Caves, T. T. 10.vi.39.
- 2 (M. C. Z. 47649) Amboni Estate, T. T. 19.vi.39.
- 4 (M. C. Z. 47650) Magrotto Est., T. T. 1.vii.39.

Native names. *Chiyoweja mihiongo* (Kimakonde at Mikindani); *liwalawahi* (Kimakonde at Mbanja); *kitowa waimi* (Kisambara).

Variation. Midbody scale-rows 26-28; supranasals in contact; prefrontals separated; supraoculars 4-4; supraciliaries 6-8.

Measurements. Largest ♂ (M. C. Z. 47650) measures 196 (110 + 86) mm., largest ♀ (M. C. Z. 47649) 220 (140 + 80) mm., youngest (Butiaba) 79 (45 + 34) mm.

Defence. From the stomach of a sand snake (*Psammodphis s. sibilans*) I recovered the tail of a Sundevall's skink, tangible evidence of the advantage derived from a readily detachable tail. This was at Nchingidi, where these lizards were found both without and within the rather dry forest.

RIOPA PEMBANUM (Boettger)

Lygosoma (Riopa) pembanum Boettger, 1913, in Voeltzkow, Reise in Ostafrika, 3, p. 350, pl. xxiv, figs. 4-5: Pemba Island.

- 3 (M. C. Z. 47651-3) Likoni, K. C. 25.vii.39.

Variation. Midbody scale-rows 24-26, and in other respects entirely in agreement with seven cotypes recently received from Pemba.

Habitat. These sandy-yellow young were taken beneath piled palm fronds in a coconut plantation half-a-mile from the ferry landing opposite Kilindini. They constitute the second record of the occurrence of this species on the mainland.

LYGOSOMA KILIMENSE Stejneger

Lygosoma kilimense Stejneger, 1891, Proc. U. S. Nat. Mus., 14, p. 405: Mt. Kilimanjaro, Tanganyika Territory.

Lygosoma gromieri Angel, 1925, Bull. Mus. Hist. Nat. Paris, 31, p. 419: Tsavo, Kenya Colony.

? *Lygosoma* (*Siaphos*) *compressicauda* Witte, 1933, Revue Zool. Bot. Africaine, 23, p. 175, figs. 1-4: Sandoa, Belgian Congo.

? *Siaphos dewittei* Loveridge, 1934, Copeia, p. 184: n.n. for *compressicauda* de Witte (not of Werner, 1897) preoccupied.

7 & eggs (M. C. Z. 47654-6) Magrotto Mtn., T. T. 1-15.vii.39.

Synonymy. *L. gromieri* was described as having a pair of supranasals but no frontonasal and was consequently referred to *Riopa*, then regarded as a subdivision of *Lygosoma*. Actually I believe it to represent an aberration in which the frontonasal is divided so as to simulate a pair of supranasals. It will be noted that a similar condition occurs in 2 of the 128 topotype *L. blochmanni* (*vide infra*), and if it occurs as a rare variant in one member of the group it is not unreasonable to assume that it may occur in another, as *gromieri* differs from *kilimense* in no other respect I refer it to the synonymy. In reply to a query regarding the type locality, Mons. Angel, with customary kindness, replied in a letter dated November 13, 1937, that Gromier had informed him that the skink was taken on a terminarium near Tsavo station. As the station is beside the Tsavo River which drains the Kyulu and Ongolea Rivers which descend from Kilimanjaro, its geographical location in the arid Tsavo district does not seem unreasonable.

The description of *L. compressicauda* Witte, which I renamed *dewittei* differs in no way from our *kilimense* material, some of the series possessing regenerated tails apparently just as compressed as that of the holotype of *compressicauda*. If my conclusion is correct then we are confronted with an amazing extension of range, *circa* 1500 miles, for Sandoa is not far from the border of Angola. A similar case of discontinuous distribution is provided by this skink's chief enemy, *Lycophidion meleagris*, which is also known only from the Congo-Angola region in the west and the Usambara-Uluguru Mountains in the east.

Variation. Midbody scale-rows 22-24; supraciliaries 7-8; fingers 5; toes 5; lamellae beneath fourth toe 14-15.

Measurements. Largest ♂ (M. C. Z. 47655) measures 156 (67 + 89)

mm., larger ♀ (M. C. Z. 47656) 129 (60 + 69) mm., a hatchling (M. C. Z. 47654) 54 (27 + 27) mm.

Breeding. On July 1 a ♀ held small ova, another 4 eggs almost ready for deposition. On July 10, 4 eggs, measuring 14 x 11 mm., and holding embryos on the point of hatching, were found in leaf mold between the buttress roots of a giant tree. On July 12, 4 eggs, measuring 13.5 x 11 mm., and two clutches so recently hatched that the shells were still soft and fresh, were found in a similar situation.

Enemies. Two eggs and the end of a tail of one of these skinks were recovered from the stomach of a wolf snake (*Lycophidion meleagris*).

Defense. On being picked up, only one skink of the entire series attempted to bite, and that but feebly.

Habitat. All were taken in deep forest between the buttress roots of trees, in which situation their eggs and enemy were also unearthed.

LYGOSOMA GRAUERI GRAUERI Sternfeld

Lygosoma graueri Sternfeld (part), 1912, *Ergebn. Deutschen Zentral-Afrika-Exped.*, 4, p. 240, fig. 3, and *quinquedigitata*, p. 241, pl. vi, fig. 5: Karisimbi and vicinity, Belgian Ruanda-Urundi.

19 (M. C. Z. 27657-66) Mubuku Valley, U. 29.xii.38-7.i.39.

Variation. Midbody scale-rows 22-24; supraciliaries 7-8; fingers 5; toes 5; lamellae beneath fourth toe 8-10. The fingers in all are well developed and show no tendency towards the race *quattuordigitata* Sternfeld, 1912, of the Rugege Forest.

Coloration. Above, much as in *meleagris*, but very different below and without such marked sexual dichromatism, viz. Below, whitish, each scale with a central black spot, these spots forming longitudinal rows; preanal region and hind limbs of adults salmon pink and less spotted; spotting in adult males like that of females but denser though the throat is not black as in *meleagris*.

Measurements. Largest ♂ (M. C. Z. 47659) measures 160 (60 + 100) mm., largest ♀ (M. C. Z. 47660) 166 (65 + 101) mm., but both surpassed in length from snout to anus by ♂ ♂ of 67-68 mm., and ♀ ♀ of 72-73 mm. with regenerated tails. Young hatchling (M. C. Z. 47657) 51 (25 + 26) mm.

Breeding. Between January 1-7 five females examined were in all stages of pregnancy, pairs of eggs in the most advanced measured 10 x 5, and 11 x 5.5 mm. respectively. Doubtless many of the eggs

listed under *L. meleagris* are those of *graueri* a point which can be determined only by dissection of those containing embryos with digits developed.

Diet. Ten stomachs revealed the following: 1 spider; 2 small mites, 1 rose beetle, 1 tenebrionid beetle, 2 weevils, 1 beetle larva — probably a wood borer, 2 grasshoppers, 3 moths, 1 large worker ant, 1 small bee, 2 fern sporangia — presumably ingested with prey.

Habitat. These skinks were found about the roots of ferns in the wet forest, their favorite habitat being on the east side of large trees, preferably those with buttress roots. Here they enjoyed the maximum benefit from the few hours of sunshine which filtered through the forest canopy, and the powdery loam tended to be drier for the frequent rainstorms came mostly from the west. To find these very secretive skinks it is first necessary to cut away the ferns which are massed about the base of almost every tree, this done the mat of fern roots which carpets the forest floor may be rolled back so that the skink, or skinks, are exposed. They burrow quickly into the powdery subsoil, though not so active in escaping as *Riopa sundevallii* would be under similar circumstances. This is probably to be attributed to the lower temperature prevailing in the Mubuku Valley of Ruwenzori at 7000 feet.

LYGOSOMA MELEAGRIS Boulenger

Plate 4, fig. 3.

Lygosoma meleagris Boulenger, 1907, Ann. Mag. Nat. Hist. (7), 19, p. 488: Mubuku Valley, 7000 feet, Ruwenzori Mountains, Uganda.

Siaphos meleagris helleri Loveridge, 1932, Proc. Biol. Soc. Washington, 45, p. 113: Bugongo Ridge, 9500 feet, Ruwenzori Mountains, Belgian Congo (not Uganda).

Lygosoma (Siaphos) Burgeoni de Witte, 1933, Revue Zool. Bot. Africaine, 24, p. 116, figs. 1-2: Kalonge, 6725 feet, Ruwenzori Mountains, Belgian Congo.

40 & eggs (M. C. Z. 47667-700) Mubuku Valley, U. 29.xii.38-7.i.39.

Synonymy. *L. meleagris* was described from a single unsexed individual which, on the basis of its color description, we can confidently assume to be a male. For twenty-five years no second example was recorded. In 1932 I described a female from the western (Congo) side of the range which differed from Boulenger's description in five distinct ways. Eight years later Parker (1940a, p. 267), reporting on a juvenile from 8000 feet, pointed out that the original description of

meleagris was inaccurate in 2, if not 3, of my points, leaving *helleri* as distinguished only by the number of subdigital lamellae (partly bridged by his skink), and coloration.

In the hope that an adequate series of topotypes would shed light on the range of variation to be expected, I visited the Mubuku Valley and there, at 7000 feet, personally captured the series listed above. This material disposed of the remaining differences, embracing the high number of subdigital lamellae of *meleagris* and the low number displayed by the type of *helleri*, and revealing that the striking color differences were only sexual (*vide infra*). It enables me not only to corroborate Mr. Parker's doubts as to the validity of *helleri* but to definitely refer it to the synonymy.

L. burgeoni was differentiated solely on the grounds of coloration and a semidivided nasal. Actually the description of the former corresponds well with some of our topotypes. As to the nasal character, though in our series probably entire, the nasal not infrequently presents the appearance of being divided or semidivided, usually on one side of the head only. It will be recorded that Boulenger described *meleagris* as having the "nostril pierced between two nasals" but on reexamination Parker found that "the nasal is undivided, though an artifact on one side simulates a suture." The recognition of *burgeoni* on this single character, therefore, would appear unjustified.

Variation. Midbody scale-rows 22-24; nostril in an entire nasal though not infrequently (M. C. Z. 47669, 47680, etc.) having the appearance of being divided or semidivided; supraciliaries 5-8; 7 being normal; fingers 4; toes 4; lamellae beneath fourth (i. e. third, as hallux missing) toe 9-12. (Based on examination of 33 skinks only).

Coloration. In life. ♂. Above, dark or black, each dorsal scale with a central or two lateral light flecks; flanks white, usually sharply distinct from back but sometimes sparsely flecked with black. Below, throat mottled black and bluish white; chest, belly, hind limbs, and base of tail salmon red (white in alcohol); rest of tail bluish white heavily mottled with black.

Young ♂ ♂ resemble ♀ ♀ in being yellowish white or uniform pink from chin to base of tail, this tint turning to salmon red as they reach maturity. In alcohol 6 sexed males, ranging from 43-63 mm. from snout to anus, had throats which were white or heavily spotted (progressively so with age), 9 others, ranging from 61-69 mm., had black throats. On the other hand, 14 sexed females, ranging from 52-75 mm., had throats which were pure white, only 3 exhibiting any spotting and then but very few spots.

♀. Above, pale brown, each dorsal scale with a blackish central shaft and the dorsal coloring shading off to translucent pink on base of tail; a dark brown streak from nostril, through eye, to flank a short distance behind the fore limb; flanks spotted. Below, throat yellowish white; sometimes one or two lines of black spots along the sides of chest and belly; rest of under surface, including limbs, to base of tail salmon red, remainder of tail bluish white heavily mottled with black.

Measurements. Largest ♂ (M. C. Z. 47668) measures 196 (68 + 128) mm., largest ♀ (M. C. Z. 47667) 193 (69 + 124) mm., but the latter is surpassed in length from snout to anus by others of from 70–75 mm. with regenerated tails. A hatchling measures 53 (24 + 29) mm.

Breeding. Fourteen females examined were in all stages of pregnancy, a pair of eggs in each of the four most advanced measured 8 x 5, 9 x 5, 10 x 5, and 10 x 6 mm. respectively. Some skinks had already laid for numerous pairs of very fresh eggs, measuring 12 x 8.5 mm., were unearthed (for habitat see *graueri* above). Other eggs were in various stages of development and we uncovered one pair from which a skink had just hatched and its fellow emerged as we watched. Later, in camp, I observed the hatching of two more pairs. To escape from the egg the little skink makes a cut two-thirds the length of one side and involving an end of the shell also. Many such hatched-out shells were collected, usually they were in pairs but sometimes several skinks had resorted to the same spot to lay. The greatest number found in any one spot was 22 in an area of about two inches in diameter. Half of these were fresh and about half consisted of shells from some previous season.

Diet. Ten stomachs revealed the following: 1 centipede, 1 scorpion or pseudoscorpion, 1 spider, 2 mites, 1 woodlouse or sow bug (Isopod), 2 beetles, 2 weevils, 2 grasshopper nymphs, 2 leafhoppers (Homoptera), 2 small flies, 1 midge, 3 caterpillars.

Defence. Only one of the entire series bit on being captured, their surest defence consists in discarding the exceptionally long tail consequently few specimens with unregenerated tails are found.

Habitat. The habitat of this species is fully described under *L. graueri*, for both 5- and 4-toed species occur together. The first three were taken on the day of our arrival during the process of clearing ferns for a camp site. Though usually only one or two are to be found at the base of any one tree, half-a-dozen were encountered among the buttress roots of one giant.

LYGOSOMA BLOCHMANNI Tornier

Lygosoma blochmanni Tornier, 1903, Zool. Jahrb. Syst., 19, p. 173: Lake Kivu, Belgian Congo.

128 (M. C. Z. 47701-50) Idjwi Id., Lake Kivu, B. C. 16-28.ii.39.

Native name. *Kashondanegu* (Lulega).

Variation. Except for six examples from Idjwi Island recorded by Sternfeld in 1912, this species is known only from the ♂ and ♀ cotypes. I therefore took the opportunity of securing the above series of topotypes from which, after the tridactyle character of the *entire* series had been checked, I selected fifty specimens for examination in considerable detail and noted the following results.

Midbody scale-rows 20-24, only 2% with the former and 8% with the latter; supraciliaries 5-7, 6 being normal; fingers 3; toes 3; lamellae beneath fourth (i. e. median, as hallux and first toe are absent) toe 8-10. Two males (M. C. Z. 47702, 47728) have the frontonasal divided or with an artifact simulating a division and thus presenting the appearance of possessing a pair of supranasals.

Coloration. In life. ♂. Above, dark brown or black, many scales flecked laterally with yellowish white; tail suffused with pink. Below, throat uniform black, body and fore limbs greenish white, each scale with a dark brown spot; hind limbs and tail brownish pink, each scale spotted with black and white; soles of all four feet black.

Of 27 sexed males it was observed that 14, ranging from 40-48 mm., and 1, of 51 mm. snout to anus, had throats which were white or heavily spotted (progressively so with age), 12 others, ranging from 46-54 mm., had the throats so heavily spotted as to appear black. There is considerable variation in the belly coloring, which may be white, each flank scale, or *all* scales, with a black central spot.

Females differ from the males in substantially the same way as has been described for *L. meleagris*.

Measurements. Largest ♂ (M. C. Z. 47701) measures 139 (50 + 89) mm., but is surpassed in length from snout to anus by ♂♂ (M. C. Z. 47721, 47734) of 54 mm., and ♀♀ (M. C. Z. 47727, 47737) of 55 mm., with regenerated tails. A hatchling measures 44 (20 + 24) mm., and slightly older skins, 60 (25 + 35) and 62 (25 + 37) mm.

Breeding. Each of four females examined held either 2 or 3 eggs, measuring 8 x 4 mm. and 9 x 4 mm. respectively.

Diet. Fragments of five centipedes, a scorpion, spider, beetle, and grasshopper.

Enemies. No fewer than twenty-two of these skinks were recovered from stomachs of wolf snakes (*Lycophidion c. ornatum*).

Habitat. More in evidence than either of the two species taken on the Ruwenzori Mountains, for on sunny mornings they might be heard rustling, and occasionally observed basking, among the fallen leaves and short grass fringing the paths in the montane forest.

ABLEPHARUS BOUTONII AFRICANUS Sternfeld

Ablepharus boutonii africanus Sternfeld, 1918, Abh. Senckenberg Nat. Ges., 36, p. 423: Manda Island and Malindi, Kenya Colony; Pemba Island.

4 (M. C. Z. 47751) Mbanja, T. T. 2.v.39.

Said to occur at Mikindani also, but I failed to find it.

Variation. Midbody scale-rows 22-23.

Measurements. Larger ♂ measures 105 (45 + 60) mm., and ♀, 98 (47 + 51) mm.

Breeding. On May 2, the larger ♀ held 2 eggs measuring 11 x 5 mm.

Diet. Stomachs of two examined by Dr. F. A. Chace held at least six crabs, three being referable to the genus *Sesarma* and three to *Uca*, in addition were unidentifiable remains of some other creature, possibly an arthropod.

ABLEPHARUS WAHLBERGII (Smith)

Cryptoblepharus wahlbergii A. Smith, 1849, Ill. Zool. S. Africa, Rept., App., p. 10: Natal, South Africa.

21 (M. C. Z. 47752-4) Mikindani, T. T. 24.iii & 12.iv.39.

10 (M. C. Z. 47755-6) Kitaya, T. T. 28.iii-6.iv.39.

5 (M. C. Z. 47757-8) Mbanja, T. T. 26.iv.39.

1 (M. C. Z. 47759) Lindi, T. T. 1.vi.39.

2 (M. C. Z. 47760-1) Mitunga, T. T. 8.v.39.

8 (M. C. Z. 47762-9) Nchingidi, T. T. 10.v.39.

Native names. Not unnaturally, this diminutive skink is thought to be the young of *Mabuya m. boulengeri* and *Riopa sundevallii* by the Yao and Konde at Mikindani and Kitaya.

Variation. Under certain conditions this species appears to produce individuals which are markedly larger than the average. I (1933h, p. 324) had occasion to comment on such a skink from Nyamkolo, Northern Rhodesia. Usually such specimens occur spasmodically with those of average size but on the Rondo Plateau (Mitunga and Nchingidi)

the majority appear to be larger than those on the surrounding coastal plain. Such an increase in size is accompanied by an increase in lamellae beneath the toes and in the number of scales about midbody (which, throughout East Africa are normally 24-26 with 22 (and possibly 20) and 28 occurring as rare variants). To clarify the position I furnish below the data derived from 26 skinks of the coastal plain (1) that they may be contrasted with that derived from 10 examples taken on the Rondo Plateau (2).

(1). Midbody scale-rows 24-26-28, only one with latter number, average 25.2; lamellae beneath fourth toe 13-16, average 14.3; length from snout to anus of six largest 40-51 mm., average 44 mm.

(2) Midbody scale-rows 26-28, only two with lower number, average 27.6; lamellae beneath fourth toe 15-18, average 16.6; length from snout to anus of six largest 33-41 mm., average 36.8 mm.

Dict. A surprisingly large harvestman (Arachnida) in one.

Enemies. Recovered from the stomachs of wolf snakes (*Lycophidion c. capense* and *capense acutirostre*) at Mbanja, from a house snake (*Boaedon l. lineatus*) at Nchingidi.

Habitat. At Mikindani under piles of palm fronds, coconut husks, and other rubbish; at Kitaya beneath heaps of wet weeds taken from, and piled at edge of, a rice swamp. At Mbanja and Mitunga in clearing camp sites beneath mango trees. At Nchingidi these little skinks were commonly seen along the edges of the paths.

SCÉLOTES TETRADACTYLUS TETRADACTYLUS (Peters)

Sepsina (Rhinoscincus) tetradactyla Peters, 1874, Monatsb. Akad. Wiss. Berlin, p. 374: Zanzibar Coast.

4 (M. C. Z. 47776-9) Nchingidi, T. T. 12.v.34.

Variation. Midbody scale-rows 24; supraciliaries 4 (or 5[?]); fingers 4; toes 4; lamellae beneath fourth toe 3.

Remarks. The structural characters used by Hewitt to differentiate the southwestern *alberti* (n.n. for *hessei* Hewitt, 1927, not of Boettger, 1887) from *tetradactylus*, which he had not seen, are invalid. Even in our small series of five (including adult from Uluguru Mountains) the frontal may be as broad as (young) or broader than (adult) long, while the relative lengths of the digits appear to be the same as those of *alberti*, which I have not seen. Doubtless *alberti* is a good race of *tetradactylus*, though I do not know how to distinguish them except by the former being said to have the scales margined with black,

whereas in *tetradactylus* of the same size there is a dark central shaft while the margins are pale brown. In adults these dark shafts apparently disappear, being only faintly discernible with a lens.

Coloration. In life. ♀. Above, pale brown, head darker, each dorsal and lateral scale with a median, longitudinal, black shaft, which, by coalescing, form sixteen conspicuous dorsal and dorsolateral lines, those on the flanks being narrower and fainter; tail with similar dark lines on a background of rich ultramarine blue. Below, body and limbs white; tail dull ultramarine with series of dusky lines resulting from a dark streak down the centre of each. See also remarks above.

Measurements. All young or subadult, the largest (M. C. Z. 47776) being only 114 (78 + 36) mm.

Habitat. All taken in damp sandy soil beneath logs lying at the forest edge.

SCELOTES TETRADACTYLUS HEMPTINNEI (Witte)

Plate 4, fig. 1.

Sepsina Hemptinnei de Witte, 1933, Revue Zool. Bot. Africaine, **23**, p. 188: Lukafu, Kundelungu, Katanga, Belgian Congo.

15 (M. C. Z. 47770-5) Ruanda near Ujiji, T. T. 10-15.iii.39.

Variation. Midbody scale-rows 22-24; supraciliaries 4 (or 5?); fingers 4; toes 4; lamellae beneath fourth toe 1-2.

Remarks. This race, which is new for Tanganyika, apparently occupies an intermediate position structurally as well as geographically between the eastern *tetradactylus* and the western *alberti*. De Witte distinguished *hemptinnei* from the former by its supposedly less depressed snout, no such difference exists when direct comparison is made between our types of *hemptinnei* and topotypes of *tetradactylus*.

Adult *hemptinnei* do differ, however, in their slightly more attenuated bodies, their slightly more rudimentary digits as shown also in lamellae reduction, and their slightly longer tails which are bronze, instead of bright ultramarine blue.

These slight differences can best be appreciated by direct comparison, and under these circumstances it would seem advisable to regard *hemptinnei* as a race which has become rather more specialized for its fossorial life than is the typical form.

Coloration. In life. ♀ (M. C. Z. 47770). Above, iridescent bronze, each dorsal scale, excepting the two median series, with a median, longitudinal, black shaft, which go to form six, interrupted, longi-

tudinal lines. Below, throat pinkish (as a result of blood vessels showing through) except on buccal border which is white; rest of undersurface white, each scale with a small, dusky, apical spot, such spots being larger on the tail.

Measurements. Largest ♂ (M. C. Z. 47774) measures 136 (76 + 60) mm., largest ♀ (M. C. Z. 47770) 153 (87 + 66) mm., but both surpassed by others with a length from snout to anus of 85 and 91 mm. respectively, with regenerated tails.

Breeding. In mid-March the testes of the males were large but the ova in five females small, in a sixth were 2 eggs, measuring 10 x 4 mm.

Diet. Two stomachs held seven termites, a cockroach, and a spider.

Habitat. In the slightly damp sandy soil beneath piles of dry or rotting vegetation in the gardens adjacent to the rice fields of Ruanda, from four to six miles east of Ujiji on Lake Tanganyika.

MELANOSEPS — Key to the Species¹

For more than a decade I have been hoping for an opportunity to secure a series of *Melanoseps* which might enable one to get an idea of the probable extent of variation and sexual dimorphism. The 24 specimens which we have obtained on the Rondo Plateau make it necessary for me to correct my (1933h, p. 326) mistake of synonymizing var. *longicauda* Tornier with the typical form. As the short-tailed type of *ater* was apparently a ♀, it seemed in accordance with the other data then available to postulate that the long-tailed type of *longicauda* was a male.

It now appears from the Rondo series that there is no appreciable sexual dimorphism for the largest ♂ measures 93 + 27 mm., and the largest ♀ 92 + 29 mm. It may be postulated that the genus originated in Tanganyika Territory and has undergone tail reduction in its process of fossorial specialization. If this be accorded priority as the most important character, then increase in midbody scale-rows, which is correlated with increase in size in favourable habitats, can take its place as a secondary development. It is on this suggestion that the following synoptical key is based.

1. Midbody scale-rows 18-20; size small, the maximum length from snout to anus being 93 mm. 2.
- Midbody scale-rows 22-28; size large, the maximum length from snout to anus being 160-210 mm. 3.

¹ Eastern forms only. *M. occidentalis* (Peters) of Cameroon omitted. *Melanoseps acontias* Werner, 1913 (1912) is referred to *Scolecoseps*.

2. Length of tail contained 1.7 times in length from snout to anus; range: northeastern Tanganyika *a. longicauda*
Length of tail contained 2.6 to 4.6 times in length from snout to anus; range eastcentral (Mpwapwa) to southeast (Nchingidi) Tanganyika *a. rondoensis* subsp. nov.
3. Midbody scale-rows 22-24; length of tail 2.6 to 4.1 times in length from snout to anus 4.
Midbody scale-rows 26-28; length of tail 3.8 times in length from snout to anus 5.
4. Midbody scale-rows 22; color below from chin to anus whitish with blackish-brown lines resulting from the fusion of a blackish-brown spot on the centre of each scale; maximum length from snout to anus 160 mm.; range: (? Uluguru Mountains, Tanganyika south to) Zambesi *a. ater*
Midbody scale-rows 22-24 (only 1 of the 12 types with the lower number); color below from chin to anus pure white in sharp contrast to the plumbeous tail, only occasional scales with a dusky brown spot showing a tendency to form lines; maximum length from snout to anus 166 mm.; range: Matengo Highlands, southwestern Tanganyika *a. matengoensis* subsp. nov.
5. Color below substantially that of the typical form, viz. from chin to anus pinkish white with brown lines resulting from the fusion of a brown spot on the centre of each scale; range: Uzungwe Mountains, southcentral Tanganyika *a. uzungwensis* subsp. nov.

MELANOSEPS ATER RONDOENSIS subspec. nov.

24 (M. C. Z. 47780-800) Nchingidi, T. T. 11-21.v.39.

One found dead on path between Kiponga and Mitunga, Rondo Plateau, S.v.39.

Type. Museum of Comparative Zoölogy, No. 47780, an adult ♂ from Nchingidi, 3000 feet, Rondo Plateau, Lindi Province, southeastern Tanganyika Territory. Collected by Arthur Loveridge, May 11-21, 1939.

Paratypes. Museum of Comparative Zoölogy, Nos. 47781-800, being 23 specimens with same data as type.

Diagnosis. As given in preceding key.

Description. Midbody scale-rows 18 (18-20 in paratypes); length of unregenerated tail included in length from snout to anus 3.4

(2.6–4.6) times. Otherwise similar to the typical form though coloration probably paler.

Measurements. Largest ♂ (Type) measures 120 (93 + 27) mm., largest ♀ (M. C. Z. 47781) 121 (92 + 29) mm.

Breeding. In mid-May this female held two spherical eggs measuring about 4 mm. in diameter.

Diet. Pupa of a midge and a click beetle larva in one stomach.

Habitat. In damp sandy soil beneath logs lying at the forest edge. The majority were taken around the periphery of the forest-clearing in which my tent was pitched, and it was across the sandy floor of the latter on the cool day of our arrival that I found the first skink wriggling. The entire series were taken by my two gunbearers and self.

Range. I refer to this race, at least provisionally, two skinks taken under similar habitat conditions at Mpwapwa and the Mkata River in central Tanganyika Territory.

MELANOSEPS ATER MATENGOENSIS subspec. nov.

Cotypes. Museum of Comparative Zoölogy, No. 44119, and eleven others in Vienna Museum, from Ugano, Matengo Highlands, west of Songea, Tanganyika Territory. Collected by H. Zerny, 1935–6.

Diagnosis. As given in preceding key.

Description. Midbody scale-rows 22–24 (22 in only one of the twelve cotypes); length of unregenerated tail included in length from snout to anus (2.6 to 4.1 times; coloration (see key) strikingly different from that of the typical form.

Measurements. One cotype ♀ (M. C. Z. 44119) measures 154 (115 + 39) mm., but is surpassed by nine others (Vienna Museum) whose length from snout to anus ranges from 121–166, the unregenerated tails from 30–49 mm.

MELANOSEPS ATER UZUNGWENSIS subspec. nov.

Melanoseps ater Loveridge (part), 1933h, Bull. Mus. Comp. Zoöl., **74**, p. 326 (Kigogo, Uzungwe Mountains).

Type. Museum of Comparative Zoölogy, No. 51076, an adult ♀ from Kigogo, Uzungwe Mountains, southern Tanganyika Territory. Collected by Arthur Loveridge, November 22, 1929.

Paratype. Museum of Comparative Zoölogy, No. 51077, a larger ♀ with same data as the type.

Diagnosis. As given in preceding key.

Description. Midbody scale-rows 28 (26 in paratype); length of unregenerated tail included in length from snout to anus 3.8 times. Otherwise like the typical form.

Measurements. Type ♀ (M. C. Z. 51076) measures 136 (108 + 28) mm., but is surpassed in length from snout to anus (210 mm.) by the paratype with injured tail.

CHAMAELEONTIDAE

As an offshoot of the Agamidae this specialized family might be placed more appropriately in juxtaposition to the agamas; in the present paper it is left in its old place for convenience of reference and to preserve uniformity with the five previous reports dealing with the herpetological collections which I have made in East Africa.

CHAMAELEO SENEGALENSIS SENEGALENSIS Daudin

Chamaeleo senegalensis Daudin, 1802, Hist. Nat. Rept., 4, p. 203: Region watered by the Senegal and Niger Rivers, Gambia and Guinea.

2 ♂ ♂ 3 ♀ ♀ (M. C. Z. 47151-2) Ujiji, T. T. 13.iii.39.

Coloration. In life. ♂. Above, pale pinkish brown, crown of head darker; on vertebral line a series of eight rusty-orange blotches; flanks with larger and smaller spots of the same color and a black line from axilla to midbody where it breaks up into a few spots. Below, throat purplish gray, the interstitial skin orange; gular-ventral crest pure white; soles of feet and tail fawn to purplish brown.

In life. ♀. Above, yellow and grass green; on flanks a lateral series of six black-edged white spots, below which is a more or less black-edged white band from axilla to groin. Below, throat green, the interstitial skin orange; gular-ventral crest pure white continued on as a narrow line beneath tail; limbs and anal area pure white.

Measurements. Larger ♂ measures 190 (108 + 82) mm., largest ♀, 240 (135 + 105) mm.

Breeding. On March 13 all three females were gravid, the largest held 60 eggs, each measuring about 7 mm. in diameter.

CHAMAELEO DILEPIS QUILENSIS Bocage

Chamaeleo dilepis var. *Quilensis* Bocage, 1866, Journ. Sci. Lisboa, 1, p. 59:
Rio Quilo, north of Cabinda, Portuguese Congo.

3 (M. C. Z. 47153-4) Ujiji, T. T. 14.iii.39.

Variation. All are young under 150 mm. in length so that the occipital lobes are of little use in diagnosis, both males, however, have well developed tarsal spurs.

Habitat. One was on a mhoga plant beside the path.

CHAMAELEO DILEPIS DILEPIS Leach

Chamaeleo dilepis Leach, 1819, in Bowdich, Miss. Ashantee, App., p. 493:
Gaboon, i.e. French Congo.

3 ♂ 2 ♀ (M. C. Z. 47166-7) Kitaya, T. T. 25.iii.39.

3 ♂ 3 ♀ (M. C. Z. 47168-9) Mikindani, T. T. 18.iv.39.

1 ♀ (M. C. Z. 47170) Lindi, T. T. 26.iv.39.

5 ♀ (M. C. Z. 47171-4) Mbanja, T. T. 27-30.iv.39.

5 ♀ (M. C. Z. 47175-6) Nchingidi, T. T. 12.v.39.

1 ♀ (M. C. Z. 47177) Magrotto Mtn., T. T. 1.vii.39.

Native names. *Naluii* (Kiyao); *naluihu* (Kimakonde); *nalwii* (Kimawiha); *lwi* (Kisambara).

Measurements. Largest ♂ (M. C. Z. 47168) measures 229 (110 + 119) mm., largest ♀ (M. C. Z. 47171) 390 (195 + 195) mm. This and another female from Mbanja are really gigantic, surpassing by 60 mm. the largest (Morogoro) females I have ever taken elsewhere. It is difficult to believe that they are subspecifically the same as the gravid females of 190 mm. from localities immediately north and south of Mbanja and in no way dissimilar climatically or topographically.

Breeding. Though females were taken in all localities they were noticeably gravid only at Kitaya, Nchingidi, and Magrotto, on the dates given above.

CHAMAELEO DILEPIS IDJWIENSIS subsp. nov.

Plate 5, fig. 2.

7 ♂ 11 ♀ 4 yng. (M. C. Z. 47155-65) Idjwi Id., B. C. 24-28.ii.38.

Type. Museum of Comparative Zoölogy, No. 47155, an adult ♂ from Upper Mulinga River, Idjwi Island, Lake Kivu, Belgian Congo. Collected by Arthur Loveridge, February 24-28, 1939.

Paratypes. The rest of the series listed above and having the same data as the type, many of them coming from the coffee plantations further down the mountain.

Native name. Lumru (Lulega).

Diagnosis. Intermediate between *dilepis* and *roperi*, agreeing with *d. dilepis* in possessing large occipital lobes but differing in the absence of a tarsal process (spur), in this latter respect agreeing with the small-lobed *d. roperi*. Both sexes have the spines of the gular crest more strongly developed than is the case with *d. dilepis*.

On first seeing females of this form I was struck by their handsome coloring (see below, and pl. v, fig. 2) which seemed strikingly different from any that I had previously encountered in East Africa.

Coloration. In life. ♂ Type. Above, light or dark green mottled and spotted with black; dorsum with seven, green-centered, black, saddle-like markings, ten or more on tail; from axilla to groin a white lateral band which, anteriorly, is bordered above and below by a few scattered orange-red spots; occipital flaps posteriorly pure white. Below, yellowish, throat with dark longitudinal lines and spotted with orange-red; gular crest dark brown; ventral crest white.

In life. ♀ Paratype. Above, light or dark green conspicuously marked with numerous large orange spots; occipital flaps posteriorly yellowish white. Below, dark green, interstitial skin of throat bright yellow spotted with orange-red; gular crest brown; ventral crest white. (Noticeably no white lateral band.)

Measurements. Total length of type ♂, 250 (130 + 120) mm., of paratype ♀ (M. C. Z. 47156) 270 (140 + 130) mm., of young (M. C. Z. 47157) 66 (35 + 31) mm.

Breeding. Four young, with dimensions approximating those given above, were brought in. Ten of the females are conspicuously gravid, the smaller eggs measuring 8 mm. in diameter.

Dict. One stomach held six green caterpillars and a *Mylabris* beetle.

Defence. Though, in protest at being photographed, the large female bit a forefinger and hung on persistently, the teeth failed to break the skin.

CHAMAELEO BITAENIATUS BITAENIATUS Fischer

*Chamaeleo bitaeniatu*s Fischer, 1884, Jahrb. Hamburg. Wiss. Anst., 1, p. 23, pl. ii, figs. 7a-b: Lake Naivasha, Kenya Colony.

17 (M. C. Z. 47178-90) Mabira Forest, U. 7-19.xi.38.

16 (M. C. Z. 47191-9) Kibale Forest, U. 9-19.xii.38.

1 (M. C. Z. 47200) Bundibugyo, U. 26.xii.38.

Native names. *Nawolovu* (Luganda); *waruju* (Lutoro); *ameuli* (Luamba).

Coloration. In life. ♂. Mabira. Above, pale blue green; centre of casque pale blue; side of head with bright yellow horizontal streaks; dorsal crest orange; flank with a light lateral line partially obscured by three irregular vertical bars of brick red. Below, throat yellow margined with white, a very distinct black gular spot; ventral crest white; inner side of limbs and tail lemon yellow.

In life. ♀. Mabira. Above, slightly olivaceous dirty white; dorsal crest olive; flanks with a white lateral line immediately below which is an interrupted olive line which commences at the orbit. Below, a distinct black gular patch; throat, ventral crest, inner side of limbs, and tail, more or less white.

Measurements. Largest ♂ (M. C. Z. 47191) measures 152 (80 + 72) mm., largest ♀ (M. C. Z. 47178) 140 (80 + 60) mm., smallest (Kibale) 64 (34 + 30) mm.

Breeding. In November small embryos present, in December larger ones.

CHAMAELEO BITAENIATUS ELLIOTI Günther

Chamaeleon Elliotti Günther, 1895, Ann. Mag. Nat. Hist. (6), 15, p. 524, pl. xxi, fig. A: Bugoye, eastern foot of Ruwenzori Mtns., Uganda.

25 (M. C. Z. 47201-9) Bugoye, U. 26-28.xii.38.

3 (M. C. Z. 47210-1) Mihunga, U. 9-19.i.39.

3 (M. C. Z. 47212-3) Nyakabande, U. 26.i.39.

6 (M. C. Z. 47214-5) Mushongero, U. 1.ii.39.

67 (M. C. Z. 47216-50) Kiraga, B. R. 8-12.ii.39.

Native names. *Waruju* (Lutoro); *nyarungu* (Lukonjo); *lumvu* (Lukiga).

Variation. Though formerly, with inadequate material, I regarded this form as indistinguishable from typical *bitaeniatus*, now, with a good series of topotypes one can separate *elliotti* by its longer gular-ventral and dorsal crests, the latter being brick red or dried-blood red (orange in typical *bitaeniatus*). *C. b. elliotti* increases in size as one proceeds southwards and probably presents an average difference, a matter which I hope to deal with at some future time.

Coloration. This is likely to play so important a part in any future revision of the races that I took pains to record it in detail.

In life. ♂. Bugoye. Above, pale blue green; centre of casque pale blue or yellow; side of head with, or without, a few ill-defined horizon-

tal streaks; dorsal crest brick red; flank with a distinct light lateral line bordered below by red while both above and below irregular mottlings of brick red may be present or absent. Below, throat yellow, or blue with a central shaft of yellow, *one* or *two* black, or blue, gular spots; ventral crest white; inner side of limbs and tail lemon yellow.

In life. ♀. Bugoye. Above, light green or yellow; dorsal crest reddish; flank with a white lateral line bordered below by rufous, sometimes a second, but narrower, white line extending from axilla to groin. Below, throat and under surface, including limbs, light green or yellow, *one*, though normally *two*, black gular spots; ventral crest and soles of feet white.

In life. ♂. Kiraga. Above, a very bright green; centre of casque grass green; sides of mouth showing a little yellow; dorsal crest dried-blood red; flank with a light lateral line partly obscured by a very broad dried-blood-red band which tends to throw off six, indistinct, vertical bars to unite with the dorsal crest. Below, throat uniformly green *without black gular spots*; ventral crest *bright yellow* anteriorly, only white posteriorly from midbody; inner side of limbs *bright yellow*; underside of tail green, browner posteriorly.

In life. ♀. Kiraga. Above, light green; supraoccipital and dorsal crests rusty brown; flank with a white lateral line bordered below by an obsolescent, interrupted, rusty brown band anteriorly extending to the orbit. Below, throat pale green *without black gular spots*; ventral crest pure white; inner side of limbs white; tail white anteriorly, brown posteriorly.

Measurements. Largest Uganda ♂ (M. C. Z. 47201) measures 149 (81 + 68) mm., largest Uganda ♀ (M. C. Z. 47215) measures 171 (90 + 81) mm. Ruanda series not measured.

Breeding. On January 18, a very small young measuring 50 (26 + 24) mm. was found on sedges in swamp at Mihunga. On January 26 and February 1 *all* eight females were gravid, the ova being small in only one.

Enemies. One recovered from the stomach of a kestrel (*Falco t. rufescens*) shot at Mihunga.

CHAMAELEO BITAENIATUS ? BERGERI Sternfeld

Chamaeleon bitaeniatus bergeri Sternfeld, 1912, Wiss. Ergebn. Deut. Zent.-Afrika-Exped. 1907-1908, 4, pp. 250-253, pls. viii, fig. 4, and ix, fig. 5: "Sirgoi" *i.e.* Sergoit, Kenya Colony.

♂ ♀ (M. C. Z. 47251-2) S. Kinangop Plateau, K. C. 27.x.38.

Native name. Kimbu (Kikuyu).

Variation. These chameleons, taken at 10,000 feet, though adult are much too small to be referred to *C. b. höhnelii* which they closely resemble except for two conspicuous rows of large, flat plates on either flank. A female chameleon from Thomson's Falls, western Aberdare Mountains, which one might expect to be subspecifically similar to the Kinangop reptiles, was recently referred by Parker (1940a, p. 269) to *C. b. leikipiensis* Steindachner, a name used to describe a chameleon taken with *höhnelii* at the same type locality and altitude — 6000 feet, and therefore invalid as a race of *bitaeniatus*.

C. b. bergeri Sternfeld was based on a single male from Sergoit, a locality given as 6000–8000 feet. Heretofore I have considered it a synonym of *höhnelii* but prefer to apply it to these chameleons rather than propose another name at this time. I might add that the possibility of identifying the Kinangop chameleons with *C. b. schubotzi* (Mt. Kenya), *C. b. altaelgonis* (Mt. Elgon, 10,500 feet), or with *C. b. rudis* (Mt. Ruwenzori, 10,000 feet) has been rejected after careful consideration and comparison with topotypes of all three. Two races are present on each of these mountains and on Kenya one (presumably from high altitude) appears subspecifically identical with the Kinangop chameleons.

Measurements. Total length of ♂, 121 (62 + 59) mm., of ♀, 146 (78 + 68) mm. The holotype ♂ of *bergeri* is 128 (64 + 64) mm. according to Sternfeld who assumed that it was not fully adult.

Habitat. I found these in long grass among rank vegetation on the banks of the Chania River.

CHAMAELEO FISCHERI MATSCHIEI Werner

Chamaeleon matschiei Werner, 1895, Verh. Zool.-Bot. Ges. Wien, 45, p. 192: Usambara Mountains, Tanganyika Territory.

♂ (M. C. Z. 47253) Magrotto Mtn., T. T. 5.vii.39.

Native name. Luvi (Kisambara, but generic only).

Synonymy. In the absence of typical *f. fischeri* from Nguru Mtn., I continue to use the name *matschiei* though it may well be a synonym of *fischeri*.

Measurements. Total length 332 (17 + 125 + 190) mm., the first measurement in parenthesis being the projecting horns.

Coloration. In life. ♂. Above, a rich, dark, velvety green, edge of

casque and vertebral ridge black; horns horn-color; tail barred with darker. Below, inner aspect of limbs and underside of tail grayish; soles of feet creamy yellow. Turns dark black all over when molested.

CHAMAELEO XENORHINUS Boulenger

Plate 6, fig. 2.

Chamaeleon xenorhinus Boulenger. 1901, Proc. Zool. Soc. London, 2, p. 135, pl. xii: Eastern Ruwenzori Mountains, 6000 feet, Uganda.

♂ (M. C. Z. 47254) Mubuku Valley, U. 2.xii.38.

♀ (M. C. Z. 47255) Mihunga Ridge, U. 18.i.39.

These specimens are topotypes from 7000 and 6000 feet respectively. In addition to the original pair only four others have been recorded in the literature over a period of forty years.

Coloration. In life. ♂. Above, head and flanks pale bluish green, each scale standing out against the purplish brown venations of the skin; vertebral ridge and upper side of tail (except for its green tip) purplish brown with four darker saddle-like markings on dorsum and eight on tail; fore limbs pale yellow green; hind limbs dark moss green interspersed with purplish brown. Below, chin and jaws tinged with green, otherwise dirty white; tail mottled with greenish white and purplish brown.

In life. ♀. Above, head and saddle-like markings a soft, olive, moss green.

Measurements. Total length of ♂ 209 (8 + 85 + 116) mm., the first measurement in parenthesis being the projecting horn; largest ♀ 210 (95 + 115) mm.

Breeding. On January 18 the female held 6 eggs, each measuring about 15 x 10 mm.

Diet. The female's stomach held two flies, two plant beetles, a metallic wood-boring beetle, a caterpillar, and a stink bug.

Parasites. Two nematodes (*Entomelas chamaeleonis*) present in mesentery, apparently lungs, of male, and several in rectum of female.

Habitat. Though strenuous efforts were made to obtain a series of these chameleons they met with no success, the female being the only one brought in. It seems probable that they are dwellers in the forest canopy. The male was found crawling over vegetation piled at the periphery of our camp clearing in the heart of the forest. It was obviously ailing and died within half-an-hour, it might possibly have been injured by the staves of porters slashing down the ferns when

making the clearing a few days previously though there were no signs of external injury to support such an idea, more probably parasitization was responsible.

CHAMAELEO MELLERI (Gray)

Ensirostris melleri Gray, 1864, Proc. Zool. Soc. London, p. 478, pl. xxxii, fig. 1: Mountains in the interior of East Africa.

4 (M. C. Z. 47256-9) Mikindani, T. T. 9 & 21.i.39.

Native names. *Litagamulu* (Kiyao); *natendalechi* (Kimakonde at Mikindani); *nandendereji* (Kimakonde at Mbanja); *naliuondo* (Kimawiha).

Measurements. Larger ♂ measures 555 (7 + 228 + 320) mm., and ♀ 500 (6 + 244 + 250) mm., their horns obviously worn down as in the much younger specimens they project 10 and 12 mm. beyond the snout.

Habits. Mr. Kent of the Public Works Department at Lindi, told me that one of these giant chameleons lived for a long time in a tree above his quarters. He said that each day about noon, with surprising regularity, it went to the end of a certain branch and defaecated. It was the sight of the accumulated droppings in one spot which attracted his attention to the reptile's routine.

Habitat. Though occurring on mountains this is not a montane species for my camp at Mikindani was almost at sea level and I captured the large (non-breeding) male in an acacia just behind my tent. The three others were brought in by local Wamawiha.

CHAMAELEO JOHNSTONI JOHNSTONI Boulenger

Plate 6, fig. 1.

Chamaeleon johnstoni Boulenger, 1901, Proc. Zool. Soc. London, 2, p. 136 pl. xiii: Eastern Ruwenzori Mountains at 6000 feet, Uganda.

1 ♂ 1 ♀ (M. C. Z. 47260-1) Mubuku Valley, U. 1.xii.38.

3 ♂ 3 ♀ (M. C. Z. 47262-7) Mihunga Ridge, U. 9-21.i.39.

3 ♂ 3 ♀ (M. C. Z. 47268-73) Mushongero, U. 1.ii.39.

7 ♂ 6 ♀ (M. C. Z. 47274-83) Nyondo, nr. Kisenyi, B. R. 8.ii.39.

Native names. *Nyampimpina* (Lutoro); *nyarungu ya pambi* (Lukonjo for male); *nyaruju* (Lukiga for male, the hornless female being known by the generic name of *Lumvu*).

Coloration. In life. ♂. Mihunga (topotype). Above, light to dark moss green, head a lighter, more yellowish green with dark spots on

casque and five sepia brown bands on side radiating outwards from the eyeball; vertebral line with fourteen pairs of saddle-like black blotches of which the first and second are continued on flanks as an ill-defined marbled band with bright burnt-orange centre, the third and fourth similar but without the orange, these four are all on the dorsum, the remaining ten on the tail; limbs spotted with black, each spot consisting of a dusky centre and black outer ring. Below, paler with a faintly indicated white ventral line; inner side of limbs dirty white.

Measurements. Largest ♂ (M. C. Z. 47268) measures 267 (25 + 120 + 122) mm. the first measurement in parenthesis being the projecting horn; largest ♀ (M. C. Z. 47269) measures 265 (135 + 130) mm.

Diet. One stomach held a grasshopper, striped coccinellid, banana snail, and a second snail 10 mm. in diameter, others held snails.

Habitat. I captured one ♀, which was at a height of twelve feet from the ground, in a small tree beside the path. The Nyondo series were brought down to my camp at Kiraga, where they are said not to occur, by pupils of the Catholic Mission. It appears probable that other collectors who labeled their *johnstoni* material as from "Kisenyi" obtained them from natives who captured them up the mountain.

BROOKESIA SPECTRUM BOULENGERI (Steindachner)

Plate 5, fig. 1.

Rhampholeon boulengeri Steindachner, 1911, Anz. Akad. Wiss. Wien, p. 178: Rainforest behind sandhills, northwest of Lake Tanganyika, Belgian Congo.

1 (M. C. Z. 47296) Mihunga, Ruwenzori Mtns., U. 18.i.39.

3 (M. C. Z. 47297-9) Upper Mulinga, Idjwi Id., B. C. 20.ii.39.

Native names. *Nyampimpina* (Lutoro); *lumvu* (Lulega). Both Batoro and Balega regard these pigmy chameleons as the young of the larger *Chamaeleo*, and therefore do not differentiate them by name.

Distribution. The Mihunga record is the first for this species from Uganda. I take this opportunity of pointing out that these represent *boulengeri* of Steindachner and Sternfeld, not of Schmidt and Witte, for though Schmidt (1919, p. 595) pointed out that there were probably two forms in Central Africa, he applied the wrong name to his sixty-three females from the Ituri, these represent *B. s. affinis* (Steindachner), type locality Beni, Ituri region.

Variation. In making both *affinis* and *boulengeri* races of *spectrum* I am influenced by the fact that both, except for their much shorter tails, differ only from the typical form in a number of average characters, viz. the even shorter rostral process, the less developed or even absent supraciliary crest's flexible process, the flatter parietal region, the casque being even less elevated posteriorly, and the shorter isolated spines at the base of the bicuspid claws, which Steindachner apparently overlooked, stating that they were absent. The two forms are geographically and structurally but stages in the evolutionary development from the more simple *platyceps* of Nyasaland to the better equipped *spectrum* of the French Congo and Cameroon.

Measurements. Larger ♂ measures 64 (48 + 16) mm., and ♀ measures 61 (47 + 14) mm. Both from Idjwi Island, Lake Kivu.

Breeding. Though so small, 49 and 61 mm. respectively, both Mihunga and Mulinga females were gravid, the latter holding 3 spherical eggs measuring about 6 mm. in diameter. The eggs in the former were damaged.

Diet. Two stomachs held many small flies, a small cockroach, spider and woodlouse.

Habitat. The Uganda female was struck by a hoe as we were digging out a very dry and rotten clump of sedge roots at the base of a giant wild banana growing on the banks of the small stream which meanders through the swamp at the base of Mihunga Ridge. Some yolky masses were ruptured by the hoe and it occurred to me that if the species is oviparous, the female may have burrowed into the powdery roots to lay, alternately it is feasible to suppose that it had fallen in unnoticed.

BROOKESIA BREVICAUDATA (Matschie)

Chamaeleon (Brookesia) brevicaudata Matschie, 1892, Sitz. Ges. Naturf. Berlin, p. 107: Derema, Usambara Mountains, Tanganyika Territory.

1 (M. C. Z. 47300) Nchingidi, Rondo Plateau, T. T. 12.v.39.

Distribution. This interesting record helps to bridge the gap in the distribution of this species, heretofore known from the Shire Highlands in Nyasaland (*brachyurus*), otherwise only north of the Rufiji River in Tanganyika Territory.

Variation. The only African *Brookesia* with a beard-like 'tuft' of scales forming a flexible process on the chin.

Enemies. Recovered from the stomach of the Usambara green snake (*Chlorophis macrops*).

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EXPLANATION OF PLATES

PLATE 1

PLATE 1

Map showing Principal Collecting Localities

1938

Landing at Mombasa (25.x), except for a stopover at Naivasha and Kinangop (26-31.x), Loveridge proceeded by rail direct to Jinja (1-5.xi). Thence to Mabira Forest (5-21.xi), Budongo Forest (22.xi-7.xii), Kibale Forest (8-19.xii), Bundibugyo near Bwamba Forest (19-26.xii), Bugoye, foot of Ruwenzori Mountains (26-28.xii) and Mubuku Valley at 7000 ft. (29.xii-).

1939

On leaving Mubuku (-9.i) Loveridge descended down the valley to Mihunga, *circa* 6000 ft. (9-21.i), then back to Bugoye (21-24.i), Nyakabande (25-30.i), Mushongero (30.i-4.ii), returned to Nyakabande (4-8.ii); Kisenye (8-13.ii), Goma (13-14.ii), Mamvu on Idjwi Island (14-16.ii), Upper Mulinga River on Idjwi (16.ii-6.iii), Uvira (7-8.iii), Ujiji (9-16.iii), Dar es Salaam (18-19.iii), Mikindani (22-24.iii), Kitaya (24.iii-7.iv), Mikindani (7-24.iv), Mbanja (25.iv-6.v), Lake Rutamba (6-8.v), Nchingidi (9-21.v), Lindi (22.v-4.vi), Siga Caves (7-17.vi), Amboni Estate (17-27.vi), Magrotto Mountain (27.vi-21.vii), Tanga (21-23.vii), Likoni opposite Kilindini (24-26.vii).

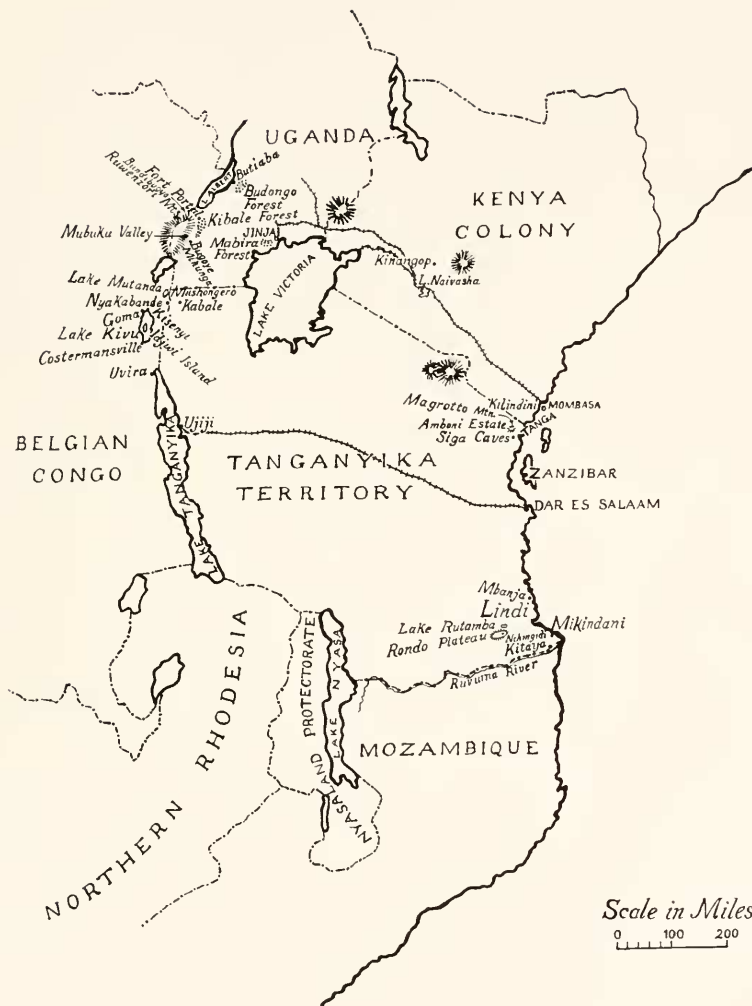


PLATE 2

PLATE 2

FIG. 1. EMIN'S WORM SNAKE (*Leptotyphlops emini emini*)

During his retreat with H. M. Stanley from the southern Sudan, Emin Pasha discovered an example of this diminutive species. The uniformly silvery-black *emini* ranges from the Belgian Congo to the East Coast, but is replaced on Pemba Island by a form (*pembae*: 1941) which consistently differs in coloration and proportions.

FIG. 2. LESTRADE'S BLIND SNAKE (*Typhlops blanfordii lestradei*)

This beautifully glossy species varies considerably in coloration, rich coppery brown or black examples are those most frequently encountered. Many were found beneath lava boulders on the lava-strewn plains near Mount Mikeno, others in termitaria upon whose owners, as well as ants, they were found to be feeding. On Idjwi Island a Lestrade's blind snake was found in the stomach of another rare species — *Miodon gabonensis graueri*.

FIG. 3. AFRICAN KEELED GREEN SNAKE (*Hapsidophrys lineata*)

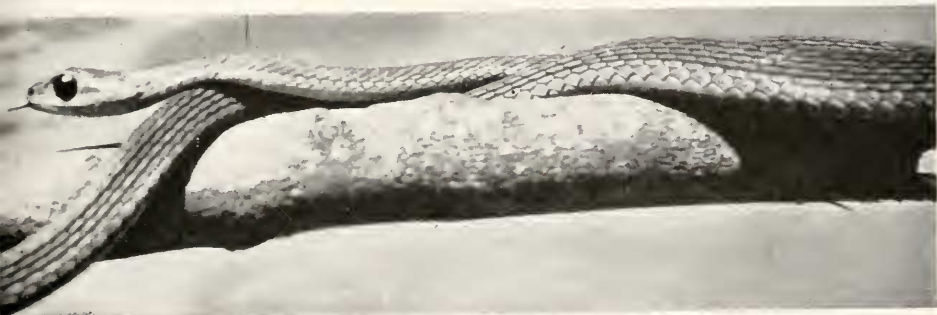
The figured female, a rich velvety green, its color accentuated by ten longitudinal black lines, was captured while moving slowly along a branch in deep forest. It was only five feet from the ground and as I took it by the neck made no attempt to bite, nor later when subjected to considerable provocation during a quarter-of-an-hour's posing for its photograph.



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PLATE 3

PLATE 3

FIG. 1. WHITE-LIPPED SNAKE (*Crotaphopeltis hotamboeia hotamboeia*).

This opisthoglyphous colubrine was encountered in the roadway at Ujiji; it immediately assumed the threatening attitude depicted and, flattening its head, struck savagely at anything approaching. So effective is the display that one instinctively accords such a snake the deference due to a more dangerous species.

FIG. 2. GABOON VIPER (*Bitis gabonica*) FROM BUDONGO FOREST, UGANDA.

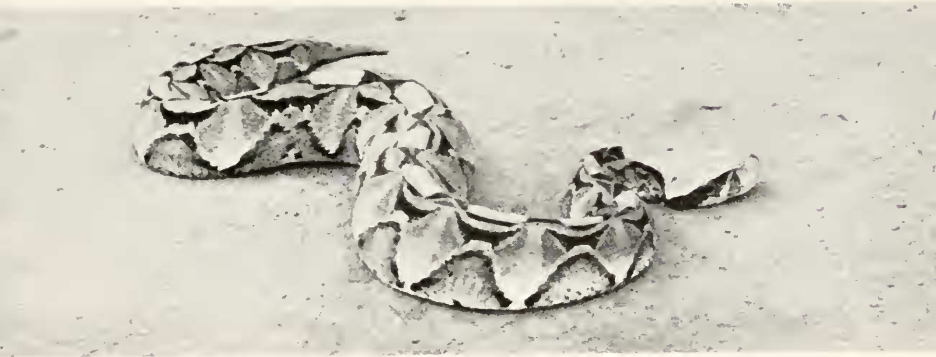
At the same time one of the most beautiful, deadly, and sluggish of African snakes, this fifty-one inch reptile was found concealed in a patch of grass in the middle of a path from which it was removed to camp to be photographed. Her weight, eight pounds, was less than that of smaller examples though her stomach held two rats and many parasites of several species.

FIG. 3. SEDGE VIPER (*Atheris nitschei nitschei*) FROM UGANDA.

The female shown, was one of a pair which I captured as they were basking in the late afternoon sun in a swamp at the base of the Ruwenzori Mountains. Both reptiles were at a height of six feet from the ground as they lay, tightly coiled but flat as plates, on top of dense tangles of creepers which smothered the elephant grass growing along the banks of a little stream meandering through a swamp at Mihunga, type locality of the synonym *A. woosnami*.



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PLATE 4

PLATE 4

FIG. 1. HEMPTINNE'S SKINK (*Scelotes tetradactylus hemptinnei*).

The series of these skinks found in slightly damp sandy soil beneath piles of dry or rotting vegetation in the gardens adjacent to the rice fields of Ruanda, from four to six miles east of Ujiji on the eastern shore of Lake Tanganyika, constitute the first record of the occurrence of this western race in the Territory.

FIG. 2. SPOTTED-LIP SKINK (*Mabuya maculilabris maculilabris*).

An examination of stomachs of this handsome species, revealed real wasps as well as a parasitic wasp, ants, plant bugs, a weevil and other beetles, moths, grasshoppers, a cockroach, fly and large spider. The figured specimen was captured on Idjwi Island, Lake Kivu, and is therefore topotypic of the alleged variety *kwidjwiensis*.

FIG. 3. BLACK-AND-GRAY SKINK (*Lygosoma meleagris*) MT. RUWENZORI.

On visiting the type locality of this little species, we found it plentiful though laborious to collect on account of its secretive habits. Many eggs, in various stages of development, were found, one pair was uncovered from which a skink had just hatched and even as we watched its fellow emerged. To escape from the egg the little creature makes a cut two-thirds the length of one side and involving the end of the parchment-like shell.



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PLATE 5

PLATE 5

FIG. 1. PIGMY CHAMELEON (*Brookesia spectrum boulengeri*).

Two-and-a-half inches in length, and lacking the prehensile tail of the typical genus, these small creatures never assume the bright colors of the larger forms, but are restricted to the shades usually associated with the dead leaves which they so closely resemble. The photograph is of a male on Idjwi Island.

FIG. 2. KIVU CHAMELEON (*Chamaeleo dilepis idjwiensis*).

The orange-spotted, green female figured above, is more handsome than her black-spotted mate. In protest at being photographed she bit a forefinger and hung on persistently, despite her size of over ten inches, however, the teeth failed to break the skin. A stomach held six green caterpillars and a Mylabris beetle so that these chameleons perform a useful service in the coffee plantations which they frequent.



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PLATE 6

PLATE 6

FIG. 1. JOHNSTON'S CHAMELEON (*Chamaeleo johnstoni johnstoni*).

Topotypes of this moss-green and burnt-orange species were taken on the Ruwenzori Mountains where snails form an item in their diet. The males alone bear horns, a character which distinguishes the typical form from the eastern Congo race — *ituriensis* — in which both sexes are hornless.

FIG. 2. ONE-HORNED CHAMELEON (*Chamaeleo xenorhinus*) OF UGANDA.

Among the choicest acquisitions resulting from the expedition were a topotypic pair of this rare species, being difficult to obtain on account of its habitat in the forest canopy. With this species again it is the male alone that is horned, though, as may be seen from the photograph, the female displays an indication of one on the tip of the snout.



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